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The **Human Hair**

**ITS CARE AND
PRESERVATION**



*A Book for Men
and Women*

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THE HUMAN HAIR

ITS CARE AND PRESERVATION

A BOOK FOR MEN AND WOMEN

INCLUDING CHAPTERS ON THE INFLUENCE OF THE
HEALTH ON THE HAIR, THE ARRANGEMENT AND
CARE OF LADIES' HAIR, HAIR DYEING AND BLEACH-
ING, AND THE REMOVAL OF SUPERFLUOUS HAIRS

BY

J. R. STITSON, M.Sc.

THE MAPLE PUBLISHING COMPANY

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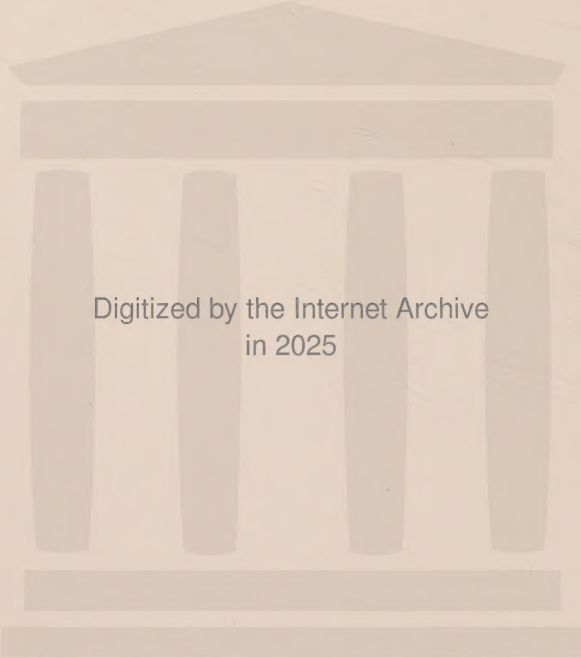
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NEW YORK

THIS BOOK
IS DEDICATED TO THOSE
MEN AND WOMEN WHO ARE AFFLICTED WITH
WEAK AND FALLING HAIR AND PREMATURE BALDNESS
TO WHOM ITS CONTENTS WILL PROVE OF
ASSISTANCE IN REMEDYING
THEIR TROUBLE



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PREFACE

THE object of this little book, which is believed to be at present the only one treating the subject at all completely, is to present to the public in easily intelligible form all the facts of any importance concerning the human hair, and particularly those which pertain to the cause, prevention, and cure of the conditions and diseases which result in injury and often total loss of it. While there is no desire to encroach on the legitimate field of the physician, there is no doubt that the successful treatment of weak and falling hair depends largely on the careful study of conditions, and the observance of the rules and methods leading to a cure or improvement, by the person who is himself concerned. It has, therefore, been our aim to give in non-technical language all the information available on these subjects, so that the intelligent person can study his

own conditions and make proper conclusions concerning the method of treatment necessary. However, in even the simplest ailment the assistance of a physician is of advantage, and in any serious trouble he is, of course, absolutely essential.

The importance of the general health in its influence on the condition of the hair cannot be overestimated; in fact most cases of early baldness are traceable to or promoted by errors of personal hygiene; and for this reason, matters of diet, care of the body, clothing, etc., have been considered with an extent of detail which at first thought might be considered entirely foreign to the title of the book.

The use of cosmetics, depilatories, dyes, and other toilet accessories has been considered both from the point of view of the physician and scientist, anxious to prevent injury to health, and that of the person immediately concerned who is desirous of improving his or her appearance. There is certainly room for some compromise in these matters.

In many cases, for the sake of definiteness or because no ordinary equivalents exist, the writer has been obliged to use technical or chemical names for the different substances and remedies recommended; as these, however, must be procured from a druggist, to whom the words are perfectly intelligible, and great pains have been taken to make the connecting text as plain as possible to the average understanding, no great difficulty will be experienced by the reader on this account. When there exists an ordinary equivalent term it has been given along with the technical word.

In addition to much personal study and experiment the writer has consulted all the accessible French, German, English, and American authorities on this and allied subjects. In most instances the source of any special information has been mentioned in the text, although it has been found practically impossible to do so in every case.

THE AUTHOR.

NEW YORK, August 25, 1900.

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THE HUMAN HAIR

CHAPTER I.

INTRODUCTION.

“Beauty in man or woman is a gift divine, yet the crowning beauty is the hair, lacking which there is no true perfection.”—SIR W. DAVENANT.

THE study of the human hair and its diseases has not been neglected by scientists and the medical profession, and many books, and a still greater number of papers and magazine articles, have been published on the subject and its various details. Almost without exception, however, these have been intended for the professional eye and ear, and the public would be little the wiser for the reading of them. The little printed matter, containing any real information on the subject of the hair, that does reach the average person is almost always biassed by its obvious

reference to some particular remedy, the use of which it is generally recommended to be accompanied by washing, massage, or other physical treatment which would answer the desired purpose even if the so-called "tonic" or "restorer," which is credited with any improvements that may result, were not used at all. Therefore, it has seemed a worthy object to the writer to collect from these various sources and from his own experience the conclusions, observations, and methods of treatment which have been most fully approved by physicians and scientists who have given the subject thorough study, and to set them forth herein in simple language which can be understood by anyone.

The purpose of this little book, therefore, is to give to the general public some practical and trustworthy information on a subject which, on account of its importance to the appearance and health and the number of persons who are troubled with fading, falling, and other diseases of the hair, has long furnished to quacks and unscrupulous persons an opportunity to sell for high prices all sorts of tonics, ointments, and washes, the great majority of these nostrums being not

only absolutely worthless, but in many cases actually causing injury to the hair, in which opinion the writer is supported by physicians and scientists.

Thus, Dr. Cooley, the eminent London specialist on the toilet, in speaking of the widely advertised "Macassar Oil," remarks:

"I have at different times tried it myself as a hair cosmetic and have known many others do the same, but its pretended effects were all moonshine. It furnishes an admirable illustration of the old adage about fools and their money." It is undoubtedly a good and nicely scented hair oil, pleasant in use and elegantly put up, and that is all that can be said in its favor, except the agreeable fact to its proprietors that it has made their fortunes."

The approximate formula of this highly "recommended" tonic is given by Dr. Cooley as follows:

Castor oil, colored red	1	pint
Alcohol	$\frac{1}{4}$	pint

Besides a small quantity of perfumes to give it an agreeable odor.

The advertisement columns of our newspapers teem with notices of hair restorers and tonics; almost every barber and hairdresser has his own especial remedy put up in neatly labelled bottles, which is recommended to every customer afflicted with thin hair or baldness, and yet in spite of the large amount of money spent each year for these remedies by the ignorant public, for the advertising bills alone must represent fortunes, not to speak of the profits of the venders, one cannot help but notice that baldness is on the increase, particularly among men, in fact is becoming an almost national characteristic of the American man in the thirties.

As a partial excuse for the sellers of these applications it may be said that the public is always looking for some miraculous cure or, at least, as most people acknowledge that the age of miracles is past, for some quick and easy method of accomplishing that which demands care and patience. They expect that, by paying a dollar for a bottle of somebody's celebrated hair tonic, and rubbing a little on their head, daily, an abundant crop of hair will start forth, or the falling out of the hair will stop without the need

of any further attention on their part. At best, external applications can do but little, and this principally in the case of the presence of specific disease, as the growth and healthy condition of the hair depend on the cleanliness and healthy condition of the body itself, and that of the scalp, and the supply of blood to the latter.

The action of medicaments on the hair is very limited; in fact, with the exception of oil, which may replace the natural oil of the hair, there is in no case a direct and favorable action; the useful purposes of these applications being, either those of destroying the germs and parasites which in some cases cause the trouble—sulphur and petroleum being thus useful—or, as in the case of cantharides and similar irritants, the results are obtained by the stimulation of the circulation of the blood in the scalp, thus causing more nutriment to be brought to the roots of the hair.

The truth of the matter is that the remedy lies almost entirely in maintaining a fair state of health and in personal care and cleanliness of both the hair and scalp. A farmer cannot raise a good crop on a field covered with stones or overgrown with weeds, neither can the hair

thrive on a scalp whose pores are choked with dandruff; all the fertilizers in the world will not produce crops on a soil which is not provided with moisture, heat, and sunlight, nor will the hair continue to grow from a body impoverished by disease or rendered weak and debilitated by overwork, worry, or the neglect of nature's laws of health and cleanliness.

The hair is provided, in the scalp from which it springs, with oil-glands, roots, and all the means necessary for its maintenance in good condition until old age approaches, when in common with the rest of the members of the body it must to a certain extent diminish and fade; but if in the meantime the general health suffers from any cause, either of disease, worry, neglect, disorders of digestion, or, if the scalp and even the general surface of the skin are not kept clean and in good condition, the hair must, according to its own natural strength, and the individual peculiarity, suffer, to a greater or less extent, those having strong heads of hair being less affected than those whose hair is not naturally vigorous.

There are, it is true, certain remedies in the pharmacopœia which may assist nature in keep-

ing the hair in proper condition when the natural aids provided by the healthy body fail, either through sickness or neglect, and there are also other agents which may prevent or cure the diseases caused by the presence of parasites on the hair or on the scalp. All of these are, however, well known to the medical profession, so that the advertisement of any secret formula of especial virtue should expose the vender to the charge of quackery. In this respect we may remark that the numerous cures, so frequently heralded as having been effected by certain advertised remedies, are generally in those cases in which disease or some other cause has occasioned a temporary fall of the hair, which would have again grown out of itself without the aid of any so-called restorer. Thus many women, when temporarily in a debilitated condition, are troubled with falling hair, which on their restoration to health grows out again.

As the general health is one of the most important factors in the preservation of the hair, it has seemed best to incorporate with the other matter relating directly to the hair a chapter giving the latest and most approved views held by

physicians on the subjects of diet, exercise, bathing, sleeping, nervous worry, overwork, constipation, and other subjects exerting an important influence on the maintenance of the health. These remarks are made with particular reference to brain workers and persons of sedentary habits, who are especially subject to defects of hair nutrition.

While most of the remarks in the chapter relating to the "Care of the Hair in Health" and in that on "Dandruff, Falling Hair, and Baldness" apply to women as well as men, a special chapter has been inserted, giving information and formulæ of particular interest to the fair sex.

The natural desire of many persons to add to their personal appearance, to conceal the effects of age, and in some cases to hide what they consider disfigurement by premature or natural graying of the hair has been taken advantage of to foist many poisonous and injurious dyes upon the innocent public. It is true that dyeing the hair is an undignified proceeding and that in the great majority of cases it does not answer the purpose of concealing age or adding to the charms of the dyer; for most

people easily detect either the sudden change, or the unnatural color; still, as the practice has come down to us from remote ages, and will doubtless continue in a greater or less degree as long as the human race lasts, it has been considered best to give at some length descriptions of the drugs, materials, and methods used in dyeing the hair as well as the results which are obtained in each case. Both the innocuous and least harmful dyes (for nearly all injure the fibre of the hair more or less) as well as the actively poisonous are treated of, in order that he or she who reads and intends making use of any of these preparations may know what they are doing and which to select. The preceding remarks will also apply to the subject of depilatories, to which also a separate chapter has been devoted.

The subjects of the infectious and parasitic diseases of the hair and scalp have not been fully treated of, as they belong more to the province of the educated physician than to that of the patient's own care.

However, the great mass of the public are not concerned with these diseases, but with those of dandruff, falling hair, baldness, and means for pre-

venting these latter troubles as well as for the general care of the hair. We have therefore endeavored to describe the most approved methods and means of treatment in simple language, giving plain directions and formulas where special applications are necessary, in order that their efficiency may be tested by anyone without great difficulty or expense.

The materials mentioned in the formulas can in almost all cases be procured at the ordinary drug-store; but in most cases the preparation or making up of the formulas had better be left to the druggist himself, who has more experience and better appliances than the average person for doing this work.

However, the best results come not from drugs but from care and cleanliness, and with the hair as with anything else "an ounce of prevention is worth a pound of cure," so that if one is conscious that he does not give the same attention to keeping his hair and scalp in proper condition as he does for his teeth and ears, the sooner he does so the better will be his chances of preserving it until old age sets in.

Many, however, leave the hair to take care of

itself and are satisfied with a perfunctory brushing and parting, hastily administered, to keep it reasonably smooth and in order; and it is not until its thinness forces itself on their attention, or the dandruff, which is in most cases the chief cause and accompaniment of approaching baldness, begins to clog the comb or sprinkle thickly the coat collar, that they commence to consider seriously the evil, which by this time has generally made alarming progress.

CHAPTER II.

THE USE, NATURE, AND PROPERTIES OF THE HAIR.

The hair serves not only for the purpose of adorning and beautifying the person, but, being a bad conductor of heat, it is of service in maintaining the temperature of the body, acting over that portion of the surface which it covers as a kind of blanket in winter, and warding off the rays of the sun in summer.

The eyebrows, eyelashes, mustache, beard, and the hairs at the apertures of the nostrils and ears prevent the intrusion of dust, insects, and other noxious things into those organs; while at the same time the air passing into the lungs through the nose and mouth is filtered and warmed.

The benefits which result from the presence of these hairs are well illustrated in the case of miners, it being noted that those without mustaches

or beards fall more readily into consumption than those who are provided with these natural protectors.

The beard also serves as a protector for the chest and throat against cold, and in general nature seems to have provided the inhabitants of the cold and temperate climates with a more generous growth of beard than the dwellers in the tropics, who have less need of it.

Shedding the Hair.

In man the shedding of the hair is a gradual and continuous process, the operation of falling out and replacement going on all the time, although in most persons it is more active at certain times than at others, varying with the state of health, season, etc. Most animals and birds have a regular period for shedding the hair or moulting, and, as the hair or feathers fall off, an entire new growth appears to take their place.

There is a great deal of resemblance between the growth of the hair and that of a plant, and the learned scientist Oken has observed that "The hair or fur is the peripheral or joining connection between the plant and the animal. The hair forms

the summit of the vegetable. As the plant requires air and light, in the animal kingdom the hair appears where it is most exposed to those elements, namely on the surface."

Distribution of the Hair.

The hair is present in greater or less quantities on all surface parts of the human body except the palms of the hands, the soles of the feet, the eyelids, and lips. The hair varies to a certain extent according to the part of the body from which it grows, such as the eyebrow hair, that of the head, and that growing from certain portions of the body itself; each has marked characteristics which distinguish it from the others; but as the purposes of the present volume are concerned with the hair growing from the scalp and face, we shall not consider the remainder. The small fine hairs which grow on all surfaces, and even among the long hairs of the head, are called lanugo hairs; they have not the complete structure of the fully developed hairs of the head, but are the first of all hairs to appear on and the last to leave any hairy surface.

Structure of the Hair.

The structure of the hair is closely related to that of the skin from which it grows, and may be considered as an extension of the skin which has become hard and horny; the nails also stand in the same relation, except that in them the process has been carried farther. The differences are somewhat similar to the changes effected in soft rubber by the action of sulphur and heat converting it into vulcanite or hard rubber, and in this connection the curious fact that the hair contains a small proportion of sulphur may be noted.

An individual hair consists of two portions, one technically called the "root," which is located in the lower layer of the skin and which there forms an expansion or "bulb"; the other is called the "shaft" and is that portion visible to the eye, which we ordinarily term the hair.

At that point of the surface of the skin where the hair appears to enter there is a small jug-like depression which we call the "follicle" or hair-sac; at the bottom of this sac there is a small projection shaped like an inverted cone, which

is technically named the “papilla”; from this projection the hair springs, and its lower end or bulb fits tightly around this “papilla” like a cap or cup, having a mouth smaller than its interior, thus giving the hair a firm hold which can only be loosened by the spreading or breaking of the cup-shaped bulb. When, therefore, we pull out a hair, we do not pull out the papilla or root, but the cup-shaped bulb which encircles and is attached to it; the papilla itself, although somewhat injured by the rough usage, is generally left intact, and another hair will soon grow out to replace the extracted one. In order to destroy forever the growth of a hair it is necessary to destroy its papilla, or root, just as in the case of some weeds which, although cut off level with the ground, will spring up again until the root itself is finally destroyed.

Into the cavity of each of the hair-sacs there opens the mouth of a small duct or tube, which leads from one of the sebaceous or oil glands, located near by in the layers of the skin. This gland secretes or manufactures oily matter for the proper lubrication of the hair, the oil working its way to the extreme end of the hair by capillary

attraction. The oil renders the hair soft and pliable, and gives it its lustre or gloss.

Although a single hair occupies very little space, yet its structure is quite complicated, and consists of several parts, which can be readily distinguished when the hair is properly prepared for viewing under the microscope. It will then be seen that the hair is hollow like a pipe with very thick sides; and close examination has detected that the enclosing section is composed of three layers, the inner one called the "medulla," the middle the "cortex," and the outer the "cuticle," or skin, of the hair. These layers are in turn built up of cells, the cells of each being of different shape: those of the medulla, which is the medium, for the nourishment of the hair, are built up like bricks or stones in a wall; the cells of the cortex or middle layer are long and pencil-shaped, and between them is distributed the pigment which forms the coloring matter of the hair; while in the cuticle, which is hard and forms a protective coating for the other layers, the cells fit into and overlap each other like a lot of flaring-topped flower-pots similarly placed. The projecting edges of these sections are sharp,

and when viewed through a microscope the hair seems to have a serrated or saw-like appearance; in the coarse bristles of the pig this can be noticed with the naked eye; and if one rolls an ordinary hair back and forth between the thumb and forefinger, it will be seen to have a side motion in one direction or the other, according to the way the edges or teeth-like projections point, and if the rolling is continued it will finally escape from the hand.

Chemical Composition of the Hair.

The hair in its ordinary condition is composed of an albuminous or nitrogenous (flesh-like) substance, containing about five per cent. of sulphur, which latter is said to be more abundant, according to some authorities, in red than in any other colored hair.

When the hair is burned a small quantity of ash remains containing oxide of iron and manganese, these forming, with the sulphur, the coloring matter of the hair. In the case of white hair there is no iron or manganese, and little if any sulphur, but the amount of ash is larger, containing phosphate of magnesium and sulphate

of aluminum, the former giving the white color. The hair is one of the most permanent of all the tissues of the human body, and its power of resisting decay is shown by its preservation in the case of Egyptian and Peruvian mummies.

Number of Hairs on the Head.

The German scientist Withof found on a moderately hairy middle-aged man, in a quarter square inch space, on the top of the head, 293 hairs; on the back of the head, 225; on the front part, 211; on the chin, 39. The number of hairs vary widely, however, according to both the race and individual, and also according to age and complexion. Upon the surface of a quarter of an inch Withof found, of black hair, 147; brown hair, 162; blond hair, 182. It would seem, therefore, that a black-haired person has the thickest individual hairs, and a blond the thinnest. The total number of hairs on the head of a blond woman has been calculated at from 140,000 to 150,000, on a black-haired from 100,000 to 110,000, while a red-haired woman has only about 20,000 hairs on her head.

Weight and Thickness of the Hair.

The weight of the hair naturally depends on its length and thickness. It rarely weighs more than twelve ounces, although in some instances heads of hair weighing from fourteen to sixteen ounces and even more have been noted.

Absalom's hair, polled once a year, is said to have weighed 200 shekels. According to Geddes this would correspond to 112 ounces, but there is probably an error in this calculation, or it is an example of the oriental habit of exaggeration.

Sir Erasmus Wilson, the eminent London physician and specialist in diseases of the skin and hair, has also observed that blond hair was generally the finest and black hair the coarsest.

The following remarks embody the results of his observations and experiments:

“The finest hairs of the head in the Anglo-Saxon are from one fifteen-hundredth ($\frac{1}{1500}$) to one five-hundredth ($\frac{1}{500}$) of an inch in diameter, or thickness, while the coarsest are from one four-hundredth ($\frac{1}{400}$) to one one-hundred-fortieth ($\frac{1}{140}$) of an inch in thickness.

“The hair of a woman's head is slightly coarser

than that of a man, the diameter of the former being from one five-hundredth ($\frac{1}{500}$) to one two-hundred-fiftieth ($\frac{1}{250}$) of an inch, while that of a man measures from one five-hundred-twenty-fifth ($\frac{1}{525}$) to one three-hundredth ($\frac{1}{300}$) of an inch. As a general rule children have finer hair than adults. Even on the same head there is great diversity in the thickness of different hairs, and even an individual hair is not of the same thickness throughout."

Length of the Hair.

The length of the hair varies with the age, sex, race, character of hair, and individual peculiarity. The average length of the hair in women of the Anglo-Saxon race is from 18 to 24 inches when left uncut; exceptionally it may grow to 36 or even 50 inches or more. The hair of men of the same race has an average length of six to eight inches if left uncut. The hair of men will never grow as long as that of women, even if it is never cut. (Wilson.)

The Life of the Hair.

The length of life of the hair varies also according to the conditions previously mentioned. In general each kind of hair has a determined length of life, but this is not always the same for every hair of the same sort. The lifetime of the eyelashes has been determined by Mahley at one hundred and thirty-five days. Pincus, a German physician who has given much study to the hair, says the period of hair growth on the human head is from two to six years, according to the individual and his conditions; that is, each and every hair will fall out and be completely renewed during such a period. Another German student of the hair, Withof, has estimated that the number of hairs falling out each day may vary from 13 to 17 to 62 to 213, and even more in cases of disease.

Growth of the Hair.

The hair grows directly from its roots, that is, it is being constantly built up and pushed forward from the root. This is illustrated by the freshly shaven beard pushing forth from the skin

of the face. It does not grow from its tip or top, but from the lower or attached end.

The rate of growth of the hair, which is greater in young women than in others, is from two twenty-fifths ($\frac{2}{25}$) to five twenty-fifths ($\frac{5}{25}$) of an inch during each ten days after the hair first pierces the skin. When it reaches a length of from ten to fourteen inches its rate of growth is reduced one-half, and toward the end of its life, some time before it falls out, growth stops altogether.

Shaving and cutting the hair certainly tend to make it become coarser, and while authorities dispute as to whether the growth is promoted thereby, the preponderance of opinion is that cutting is not in general favorable to the growth of the hair.

One authority has advanced, with a good show of reason, the theory that in persons having a strong growth of hair it is stimulated by cutting, while in those having a weak or moderate growth the vigor is diminished by the operation. Certainly vigorous and healthy trees are benefited by a course of pruning, which injures weaker ones.

Curly Hair.

The natural curling quality of the hair depends on the shape of its cross-section: if it is perfectly round, that is, if the hair is shaped like a perfect cylinder, it will not curl naturally; but if the cross-section is oval, that is, if the hair is thicker in one direction than the other, the fibres on one or two sides are stronger and more numerous than those on the other, and consequently the hair is drawn to one side and curved or curled. Damp weather causes the hair to swell and increases this strain; therefore, naturally curly hair becomes more curly in rainy weather, while the reverse happens to naturally straight hair made to curl artificially.

Hair and Electricity.

Hair is peculiarly sensitive to the action of electricity, which can be illustrated by passing a rubber comb through the long hair of a woman, when a slight crackling sound is heard.

Strength of the Hair.

The hair is very much stronger in proportion to its thickness than any other portion of the

body. Weber says that a hair ten inches long is capable of being extended one-third of its length, and its elasticity is so great that after being elongated it recoils and is but one-eighteenth ($\frac{1}{18}$) longer than it was before the traction.

The Hair as an Organ of Touch.

In many cases the hair serves as a means of feeling of exquisite sensibility. In man the portions best provided with nervous apparatus for feeling are the eyelashes, the hair of the nose, cheek, chin, and lips. Animals and insects are provided with hairs of much greater sensibility than those of man.

The Hair as an Excretory Organ.

Microscopic observation has revealed the fact that the hair absorbs matter from the air and excretes in about the same proportion, so that the lungs and skin are not the only organs of the body which play such a part in connection with the air.

When baldness sets in, the hair has lost its excretory and absorbent canals, and the other or-

gans, such as the lungs, skin, kidneys, must perform as well as possible the duties previously performed by the hair.

The scalp perspires much more than before, and a sediment in the urine is formed (for a considerable time) which was not observed previously to the loss of hair. (Robinson.)

Hence the hair plays an active, if limited, part in maintaining the equilibrium of health.

The Hair and Individual Temperament.

The mental disposition and even the physical strength are believed by many to be indicated by the hair. Black, curly, and stiff hair are said to indicate a melancholy temperament, fair hair a sanguine or phlegmatic temperament, and red hair either a very cunning or a very good character. Hence, it has been said, we meet in prisons with many red-haired women and black-haired men; rarely with fair-haired criminals. All this, of course, is subject to so many exceptions that it is scarcely to be relied on. Very fine hair does generally, however, indicate a nervous temperament and either artistic or literary inclinations. Musicians and artists are usually

abundantly provided with hair, which is often worn by them in an eccentric manner.

Hair Growth after Death.

Scientific opinion is somewhat divided as to the actuality of the phenomenon of the growth of the human hair after death, but the preponderance of testimony seems to point to the fact that some growth does really take place, although the marvellous tales circulated, such as the following, are hardly to be credited:

“When the Parish Church of Turvey, Bedfordshire, England, was undergoing restoration in 1854, a large stone was raised, which some three hundred years before had been placed over the remains of the Lady Johanna, wife of the second Lord Mordaunt. Her remains appeared in a shroud of yellow silk which still retained its color and firmness. *Her dark auburn hair had grown so much after death as to fill up the space around and form a mould for the head.*”

Transplantation of Hair.

The German physician Tieffer has made some experiments on transplanting hairs from one

person to another, or from one part of the body of the same person to another part, and has succeeded in both cases in making a certain proportion, but never all, take root and grow. It is also reported that he has succeeded in the artificial implantation of lost eye-lashes.

The Scalp in Baldness.

When the hair has completely disappeared from any considerable space of the surface of the scalp, there are certain remarkable changes in the structure of the scalp itself; it has no longer the stiff and glandular structure that it formerly had, for the hair-bulbs, the sebaceous glands, and other accessory organs, which gave it this appearance, have withered away, and it has now become smooth and flexible like the forehead, and in many cases is so dry that it shines as if polished.

CHAPTER III.

THE CARE OF THE HAIR IN HEALTH.

A fine, healthy, and vigorous suit of hair has always been an object of admiration and desire. This was particularly the case with the ancients, among whom, and especially in the case of men, more attention was paid to its care and arrangement than in our own time.

Perhaps no style of hairdressing, combining both elegance and simplicity, has ever equalled that of the ancient Greeks, among whom both men and women gathered the hair up in a kind of knot on the top of the head, often binding and ornamenting it with a pin or other article of jewelry of simple form.

The Assyrian men were noted for their attention to their hair, and particularly to the beard, which they wore plaited or elaborately curled.

The ancient Germans, and in fact nearly all the so-called barbarians of ancient times, wore

their hair long; and it was no doubt the beautiful flaxen hair of the captive Anglo-Saxon children which attracted the attention of the Roman pontiff and called forth from him the remark, "Not Angles, but Angels."

Important ceremonies and events in life were often emphasized by some sort of treatment of the hair of the individual concerned; thus the Grecian youth and maiden, a few days before marriage, are said to have cut off and consecrated their hair as an offering to the gods, while it is related that, among the Anglo-Saxons, young women who before marriage wore their hair uncovered and untied, flowing in heart-breaking ringlets over their shoulders, as soon as husbands were won, the successful tresses were abandoned as things that had served their purpose and without further use. However, there were no divorce courts in operation at that time, and as human nature changes very slowly, we are inclined to think that these accounts are somewhat exaggerated and that such acts on the part of the women of olden times were rather the exception than the rule.

Tearing the hair and casting ashes upon it

were favorite methods of expressing great sorrow; and even in the present unemotional epoch our hands naturally seek the hair in moments of great anger or emotion.

The ancient Hebrews referred to shaving the head as denoting affliction and shame, and to this day the Arabs speak of a bald head as a degradation, and in making an oath always add, "If I have done it, then may the Lord turn my locks into a bald head."

While the man of the present period does not indulge in these fanciful ceremonies and imprecations, he nevertheless appreciates quite keenly the value of a fine head of hair, which, however, the demands of the modern costume and the increased responsibilities and worries of the modern life not only of themselves tend to injure directly, but also leave little time for proper care and attention to the hair.

As we have observed before (and we cannot impress this fact too strongly on the minds of our readers), in all troubles with the hair, "an ounce of prevention is worth a pound of cure," and the very little attention which a healthy person with a healthy head of hair is required

to give to it is that attention which is most amply rewarded, because once the hair becomes diseased, or its organs impaired by neglect, so much more time and effort must be made to restore it to its former condition, and the results are not always as successful as could be desired.

The attention which a person in good general health, blessed with a healthy head of hair, should give to it may ordinarily be confined to the proper cleansing of the scalp by periodical, but not too frequent, washings or shampoos; to a proper and moderate use of the comb and brush, as hereinafter described; and to particular care in preventing exposure to infectious diseases, among which it may strike with surprise many readers to hear named that very common affection ordinarily called "dandruff," or of which the so-called dandruff scales are the result. In addition, the head-gear should not interfere with the proper ventilation of the hair, nor should it be exposed unduly to draughts or to the heat of the sun or powerful lamps.

There are persons blessed with hair of such vigorous growth and strength that it will thrive

in spite of the neglect of any or all of the above-mentioned precautions; but to the vast majority inattention to these simple matters will, sooner or later, cause more or less premature injury to the hair.

A certain varying degree of grayness, and to a less extent of thinning of the hair, are the natural and inevitable accompaniments of approaching old age; but loss of hair and grayness in by far the greater number of cases are too premature by twenty and in some cases even thirty years, and are for such periods in most cases almost entirely preventable, and in nearly all capable of being greatly ameliorated.

Washing the Hair and Scalp.

The object of washing the head is to keep it sufficiently clean and to insure the healthy action of the skin of the scalp from which the hair grows; therefore, when this purpose is accomplished, any further washing or wetting is unnecessary and is apt to do more harm than good.

The practice of wetting the hair, especially when it is thick, in order to make it lie down

more easily, is a harmful one, and should be avoided if possible.

The necessary frequency of washing the head depends largely on the nature and surroundings of the person concerned; if his head is naturally very oily and exposed much to dust and dirt, or if dandruff be present, it may be necessary to wash or shampoo it every three or four days; for the average man whose occupation does not expose him to very much dust and dirt, a weekly shampoo is perhaps as often as is necessary, while even ten days or two weeks may be allowed to intervene; two weeks, however, is as long a time as the scalp should be allowed to go unwashed.

In using the expression "shampoo" in this book we do not necessarily imply that the operation is to be performed by a barber; in fact, taking into account the unnecessarily strong and injurious shampoo liquors employed by most barbers, and the dangers of exposure on leaving the barber-shop with damp hair, we think it best for each one to be his own shampooer, and perform the operation in his own chamber or bath-room with soap and water or borax,

which are the best shampooing agents in existence.

For women, who have a more vigorous hair growth than men, who are less exposed to dust and dirt, and whose hair is thicker and protects the scalp better, although it may cause it to perspire more freely, if their hair and scalp are in a fairly healthy condition, from two to three weeks may be considered the minimum limit between washings, and five weeks the maximum.

Great pains should be taken immediately after washing to thoroughly dry the hair as quickly as possible and not to arrange it while it is still damp. Further details concerning the washing and drying of ladies' hair will be found in the chapter especially devoted to the hair of the fair sex.

The practice of barbers in wetting the hair in order to make a smooth appearance is very injurious, as not only are there often harmful salts and chemicals in the liquors used, but even plain water injures the hair when left to dry on it, and, moreover, the dampness and consequent exposure when the person leaves the shop, fre-

quently bring on colds and catarrh. It is therefore better for the hair and the health to leave the hair dry, or if necessary use a little bay rum, although even that does not do a healthy head of hair any particular good, still it may assist in preventing a cold after having the hair cut in cold weather.

In washing the head the main object is not so much to cleanse the hair but the surface of the scalp, and in performing this operation the hair should be pulled and twisted as little as is possible; this is best accomplished by spreading the fingers slightly and rubbing them with moderate force through the hair, like the teeth of a rake; the nails should not come in contact with the scalp, but only the smooth under-side of the fingers. The hair of men is sufficiently exposed to the cleansing action of the fluid by this method, and even with women it is more important to thoroughly wash the scalp than the hair, for it is the source and nourisher of the hair.

In general the more simple the composition of the fluid used to wash or shampoo the head the better the results; plain water, however,

does not possess the power of attacking the oily deposits, which are always present in greater or less quantities. The best shampoo liquor for ordinary use is good soap and water; any good toilet soap will answer the purpose; the popular impression that there are many harmful ingredients in toilet soaps being for the most part erroneous. Laundry or kitchen soap should never be used, as it contains too much alkali. Good castile soap is perhaps preferable, but a good article of this kind of soap is not always obtainable. The writer himself uses Ivory soap, although there are perhaps several other brands on the market just as pure and good.

The water used should not be very warm nor very cold; preferably it should be either slightly tepid or about the temperature of an ordinary warmed dwelling room. Hard water should not be used for washing the head, or for that matter any other part of the body, as the lime in it roughens the skin. Hard water may be softened by boiling or by the addition of borax or soda; but soft water is preferable if obtained without resorting to these precautions, as the boiling deprives it of its free oxygen (in other words,

makes it "flat"), and the action of soda particularly is not favorable to the skin.

Borax is much used in shampooing and washing, and its action is less harmful than that of any other salt; still for the average person there is nothing equal to good soap. Borax has a somewhat more powerful action than soap on dirt and oils, and may be used by persons whose heads are unusually oily or who are afflicted with dandruff. From a teaspoonful to a tablespoonful dissolved in a basin of water is sufficient. Care should be taken to see that it really is dissolved, before commencing to wash, by crushing any lumps remaining to powder.

The article of borax sold in small packets in the ordinary grocery stores in the United States is quite pure, and answers the purpose as well as when purchased in more expensive shape at the druggist's; in fact, these packets are generally marked "chemically pure," and for all practical purposes really are so. It is much better to use borax than an impure or alkaline soap.

The carbonates of soda, potash, and ammonia, and sometimes even stronger combinations of these alkaline elements, are most frequently used

as the base of the ordinary barbers' shampoo liquid, sometimes in combination with more or less borax. They form a good lather, and certainly are effectual in removing dirt and grease; but their action does not stop at this point, for they even attack to a slight extent the structure of the hair and skin themselves. They also remove more oil from the hair than is necessary or even good for it.

Their action, therefore, even when pure, is not beneficial, and they are not always to be had in this state. The use of liquid ammonia in the water for washing the head is injurious and should be avoided.

Combs and Brushes and Their Use.

The importance of the use of the comb and brush in keeping the hair in good condition is only inferior to cleanliness and the preservation of the general health.

The comb should be of rubber or some flexible gum, with large, rounded, blunt-pointed and coarse teeth; the teeth should be moderately elastic. In no case should a comb be commonly used which has more than twenty teeth to the

inch, and the space between the teeth should be fully as wide as the thickness of the teeth themselves when there are twenty or less.

The fine-tooth comb should never be used to take the place of the regular comb; in fact, it should never be used at all, except when very fine dirt, parasites or their eggs render it necessary, and even then there are other means of getting rid of these intruders. When it is used, the greatest pains should be taken to pull and strain the hair as little as possible.

Combs are intended for use only on the hair, and they should not be used to scrape or rake dandruff from the surface of the scalp, as is often carelessly done. Serious and permanent injury frequently results from the carelessness of parents and nurses irritating and wounding the skin of the scalp of children when combing their hair.

A brush should be selected which has only moderately stiff bristles, those having very stiff or metal bristles should not be used at all. The so-called "electric brushes" which are widely advertised in the newspapers and periodical literature as possessing specific curative proper-

ties, do not in general exert any electric action whatever. Sometimes a small magnet is put in the handle, but even this does not supply any electricity to the head or hair. The venders of these brushes generally direct that they shall be used on the head for a certain definite period each day, and the stimulus and massage which this extra brushing exerts on the scalp are responsible for most of the cures so widely heralded, and which could just as well have been effected by the use of an ordinary brush in the same manner and to the same extent.

In the ordinary use of the brush it should only be pressed down on the hair just hard enough to keep it smooth and clean and to remove the dirt and dandruff which may lie on the surface of the hair. When, however, the hair is thin and the scalp needs stimulating, a soft brush may be used to massage the scalp, exerting only pressure enough to give a moderate glow or sensation of warmth in the skin.

The use of brushes and combs to clean the dandruff from the scalp should be avoided, as the scraping and raking action tends to injure the skin of the scalp. Washing or shampooing

is a much better and more effective means of accomplishing the removal of dandruff.

Every person should have his own especial brush and comb, particularly if he is not troubled with dandruff, and each one should be careful to avoid using those of others or permitting others to use his. The reason for this precaution is, that both the varieties of dandruff, which are classified as separate diseases by many doctors, but which are similar and in the main cured by identical methods of treatment, are contagious diseases; that is, a person who is not troubled with dandruff, by using the comb or brush of one who is so afflicted is very apt to acquire it himself, particularly if the common use is continued for some time. The disease may also be transmitted by contact. Hair-dressers and barbers are the most common spreaders of it, as they use the same brush and comb on the heads of diseased and non-diseased persons alike, and may even transmit it with their fingers when rubbing the head.

There are also several other more painful and disfiguring contagious diseases which are transmitted by the same means, such as the several

varieties of what is commonly called "barbers' itch," but these are not nearly so common as dandruff, and the public is better informed as to the risk it runs concerning them.

Care should be taken to clean the comb and brush periodically; the former may be roughly picked out with a wooden toothpick and then gone over with an old tooth-brush and water. Much of the dirt, dust, dandruff, and hair in the brush may also be picked out with a long pin; the brush should then be washed in water to which a little ammonia has been added, or borax may be substituted for the ammonia, and in such case it dissolves more quickly if the lumps are crushed or lukewarm water is used.

The brush should not be completely immersed in the water, nor should the back of it be wet, as that injures the fastening of the bristles; it should be gently moved up and down or sideways in the water and then allowed to dry thoroughly, or, before drying, a final rinsing in another basin of water in which a little ordinary alum has been dissolved will increase the stiffness of the bristles.

The Use of Oils and Pomades.

Persons having healthy skin and hair should have no use for oils and pomatums; in fact, under such conditions their use is prejudicial. If one's hair is unnaturally dry the indications are that he is of a somewhat abnormal constitution, or, what is more probable, that something is wrong with his general health or the health of his skin. When absolutely needed, there are various oils which form a partial substitute for the natural oil secreted by the sebaceous glands which nature provides to keep the hair from becoming rough and brittle, and which gives it its natural soft and glossy appearance.

The oil of ergot is said to answer this purpose very well, and to a certain extent is said to prevent dandruff and splitting of the hairs. In general, however, the animal oils are more suitable for use on the human hair than the vegetable, as they are more nearly related in their composition to the natural oils of the body. Of these, that sold under the trade name of "lanolin," and which is extracted from the wool of the sheep, exerts probably the most favorable

action of any where the natural oil is deficient. Among other vegetable oils, besides the above-mentioned oil of ergot, the most useful are coconut oil and olive or sweet oil. Many of the other vegetable oils have the defect of containing certain gummy or mucilaginous substances, as in the case of cottonseed oil, which is often used as an adulterant of or substitute for sweet oil.

Petroleum oils and their related semi-solid greases, such as vaseline or petrolatum, are not so favorable in their action on the hair as either the animal or vegetable oils, as the hair does not readily absorb them. They have been much advertised and recommended in the past, but the benefits quoted in the advertisements do not seem to have been warranted by the actual results. The petroleum products cannot be said to promote the growth of the hair, and perhaps their chief value lies in their antiseptic properties, which have some use in cases of dandruff and other germ or parasitic disease affecting it. They have no specifically harmful action on either the hair or scalp, but are simply unnecessary for one who has healthy hair.

Pomades, bandolines, and other preparations

of gums or fats, which are sometimes used to give a full appearance to the hair or to keep it in position, do not benefit it, nor, if pure and used in moderation, do they do much harm, if they do not interfere with proper washing. Their use is, however, considered at the present time an evidence of rather bad taste. Many varieties are adulterated, and some contain injurious substances.

Cutting the Hair.

There is considerable difference of opinion among physicians as to whether cutting the hair acts as a stimulant or the reverse. However, it certainly does not increase the number of the hairs, and on the whole the preponderance of testimony seems to indicate that the cutting of the hair does not of itself stimulate its growth in the great majority of cases, but it does afford the scalp better ventilation and exposure to light, and allows it to be kept clean more easily.

The hair of women which has been cut after the age of twelve or thirteen years, or during early womanhood, never grows as long as it would have done if left uncut.

Children's hair should be kept cut moderately short, because, even if the doctrine that long hair acts as a strain upon the child's vitality be false, it certainly attracts and retains dirt much more than short hair, and consequently the scalp cannot be kept so clean, besides it keeps the head hot, and in some cases irritates children of a nervous tendency. The hair of girls may be kept cut up to the ninth or tenth year, if so desired; after that it should not be cut, as cutting makes it get coarser, and, as previously stated, it never grows so long if cut after that age; but if the girl is so situated that the hair and scalp cannot be regularly washed and cleansed, it is better to keep the hair cut moderately short until a few years later.

A fine head of hair, however, adds as much to the beauty of a little girl as to that of a grown woman, and while the child is not generally so much concerned about it as her elder sister, it is perhaps wise, when proper care can and will be given to it, to allow it to grow without cutting from very early youth, and the child should be trained to do as much of this care herself as is possible for her to do properly.

The cutting off of the extreme tips of the hair seems to exert a beneficial influence, especially if the hair is weak or ragged. Split hairs should be cut off above the cleft as soon as they are noticed. Shaving the head, and even what is termed shingling it, should never be resorted to except in case of sickness, and then only on the best medical advice; it hardly ever results in any improved growth, while it certainly detracts largely from the personal appearance.

The practice of singeing the hair not only does not produce any beneficial effect, but almost always has a contrary result, in spite of the fact that it is often recommended by many good barbers.

Hair which has become tangled and matted together through sickness or neglect should not be cut until all other means to straighten it out have been exhausted. The use of oil, soap and water, and the comb—which last should, however, be used sparingly—may be tried; but perhaps the chief reliance may be placed on the patient use of the wetted fingers and finger-nails, working with as little pulling and straining as possible.

Arrangement of the Hair of Men.

The method of brushing or wearing the hair of men is largely a matter of taste and fashion, and must naturally vary considerably, according to the amount and kind of hair and the features of the individual. In general, however, simplicity is the best guide, and excess in any direction should be avoided. Very long or very short hair, pompadour style, and other eccentricities in dressing the hair, create the impression that the wearer has not good taste or is careless of his personal appearance. Some remarks on the manner of wearing and dressing ladies' hair are given farther on in the chapter especially devoted to them.

In arranging the hair, care should be taken to allow it to follow its natural direction as closely as possible. The reason for this will be clearly understood from the following description of the natural arrangement of the hair on the head by Sir Erasmus Wilson: "If one looks closely at the arrangement of the hair on the head it will be seen that the hair radiates, as it were, from a single point—the crown—to every

part of the circumference, making a gentle sweep behind, toward the left and right, and in front. The direction of this sweep is naturally indicated on the heads of children, and is that in which the hair is turned."

Combing, twisting, or bending the hair in an opposite direction to that which it naturally turns, cannot help but prove injurious to its growth, and is particularly so if it is subjected to a continuous strain while being held in place with a pin or other instrument.

Shaving.

Every man should at least learn to shave himself, even if he does not intend making a practice of doing so.

A little pains and patience will make even the most awkward and tender-skinned person an adept; for not only is there constant danger of infection in the barber-shop, even if one is provided with his own cup, brush, and comb; but the practice is wasteful of time and expensive. A man obliged to be shaved every day will spend in a year, at the low rate of ten cents a shave,

not including occasional tips to the barber, the sum of \$36.50, almost sufficient to pay the annual premium on a \$2,000 twenty-year tontine life insurance policy with profit-sharing features in any first-class company. The time consumed also mounts up to a considerable item in the aggregate, although perhaps, to hard-pressed business and professional men, the process of being shaved affords an agreeable rest and relaxation, and in small cities and villages the barber-shop is quite a social feature among the male inhabitants.

Besides dandruff, the contagious nature of which disease has not hitherto been generally recognized, but which is very commonly acquired in barber-shops, ring-worm and the several varieties of the disease commonly called "barbers' itch" may also be contracted there. The former is very obstinate and difficult to cure, and fortunately is not nearly so common as the latter, whose temporary disfigurations we often see. These diseases are most frequently acquired from a damp towel, and less often from the brush or the barber's hands, and very seldom from the razor.

A scrupulously clean towel, a personal cup, shaving brush, hair brush, and comb, which are never used for anyone else, and also scrupulously clean hands on the part of the barber, are therefore prime requisites in avoiding contagion when it is found necessary or preferable to be shaved by a barber. It is difficult to always have these conditions guaranteed, even by the most honest and well-intentioned barber.

Some persons who go cleanly shaven suffer in the winter from colds, sore throat, and even neuralgia. These troubles may in many cases be considered as direct consequences of the shaving, because, especially if one shaves very closely, more or less of the thin outer skin is removed and the delicate surfaces are irritated and rendered more or less susceptible to the action of cold. Those who shave and are troubled in any of these respects in cold weather, might well try the experiment of going unshaven for a short time to see if an improvement results.

Easy Shaving.

The following is the substance of the instructions of the celebrated Mr. Mechi:

1. Never fail to wash well the beard with soap and cold water and to rub it dry immediately before applying the lather, of which the more one uses, the thicker it is, and the more it is rubbed into the skin the easier will be the process of shaving.

2. Never use warm water, as it causes a tender face.

3. The moment one leaves his bed (or bath) is the best time to shave.

4. Always wipe the razor clean and dry and strop it before putting it away, and always put the shaving-brush away with the lather on it.

5. The razor (being only a very fine saw) should be moved in a sloping or sawing direction and held nearly flat to the surface of the skin, care being taken to draw the skin as tight as possible with the left hand so as to present an even surface and throw out the beard.

6. The practice of pressing on the edge of a razor in stropping it soon rounds the edge; the

pressure should be directed to the back, which should never be raised from the strop. If you shave from heel to point of razor, strop it from point to heel; but if you begin with the point in shaving, then strop it from heel to point.

7. If you only once put away your razor without stropping it, or otherwise perfectly cleaning the edge, you must no longer expect to shave clean and easy with it, the soap and damp so soon rusting the fine teeth and edge.

8. A piece of soft plate-leather or chamois skin should always be kept with razors to wipe them with.

9. Those having very tender faces should not attempt to shave too closely. It is better, both for the appearance and the tender skin, to go over the face once with the razor every morning than to have a close shave every other day.

The growth of the hair on the chin and lip is stronger than on the scalp; the hairs are coarser, even if not shaven, and more thinly placed. The reason why the hair of the face is stronger and lasts longer than that of the scalp is that the former grows from a thick tissue well supplied with fat and blood-vessels, while the

flesh of the scalp is at no place far removed from the bone and is not so well supplied with fat and blood. Moreover, the chin and lips are better lighted and ventilated and generally kept cleaner than the scalp. It is therefore a common sight to see perfectly bald-headed men having a heavy beard, and while in some of these cases the loss of hair is due to natural and unavoidable causes, it is more often the result of gross neglect and carelessness. While, therefore, the mustache and beard, being of stronger growth, are capable of withstanding more abuse than the hair of the head, it does not follow that they are in any way benefited by neglect and the use of harmful applications.

The use of pomatum, waxes, and other dressings should be avoided; a little brilliantine may be used if desired, as it softens the hair and gives it a glossy appearance. A very good formula for it is as follows:

Glycerine	One part
Castor oil.....	Two parts
Alcohol	Three parts

If desired, a few drops of any perfume that may be preferred may be added. The ingredients

may be put in a bottle and mixed by thorough shaking, when they are ready for use.

The manner of wearing the mustache or beard, or of dispensing with both or either of them, is a matter of personal choice, fashion, or taste. However, the last is never consulted in the style of wearing chin whiskers without a mustache, adopted by many men in the rural districts. Most men have not a sufficiently strong growth of hair to produce becoming side whiskers, which to be effective should be either very thick or long. However, such are so rare as to be somewhat eccentric, and they are not becoming to many men who do wear them.

The mustache and beard should be washed regularly with soap and water, but not necessarily every time that one washes his face. Particular care should be taken when washing them to cleanse the skin underneath.

Hats and Their Effect on the Hair.

Without doubt a certain proportion of the cases of baldness are accelerated, if not caused, by tight-fitting hats, which constrict the blood-vessels leading up to the top and front of the

scalp, and thus diminish the supply of blood and the nutrition it carries, which are needed for the proper growth and good condition of the hair.

The scalp is supplied with blood by arteries, or blood-channels, running up along the back, sides, and front of the skull; as the flesh there is very thin, these arteries must be close to the bone, and consequently are compressed by the pressure of the tight-fitting hat-rim, and the supply of blood for the numerous small branches which radiate from them to all parts of the scalp, and for the still finer branches which communicate directly with the hair-roots, is seriously diminished.

Everyone has noticed the red band of congestion on the forehead when a tight-fitting hat has been removed, and which is particularly noticeable after one has been exercising and the blood is circulating freely.

The fact that most cases of premature baldness begin at the forehead, where the hat fits most tightly, taken in connection with the fact that baldness almost never, except in some cases of special disease, penetrates below the line of

the hat-band, certainly indicates that the tight-fitting hat is directly responsible for much of the trouble.

It is true that there are many people habitually wearing tight-fitting hats who are not only not bald, but in some cases have abundant heads of hair. There are, however, a number of reasons which account for their immunity in this respect; thus, the shape of the head may be irregular, or knobby, and the rim of the hat consequently fitting at a few points only allows the arteries to escape compression; or a thick, fleshy scalp, or even the exceptionally heavy growth of the hair, may act as a cushion and produce the same effect.

In woman the scalp is thicker and contains more fat than in man, and women also do not wear hats which compress the blood-vessels or interfere with the ventilation of the hair, and these facts may in part account for their almost universal freedom from baldness as compared with the opposite condition in men.

It has also been observed that farmers and others who wear hats of soft and yielding materials are less troubled with baldness than the

inhabitants of cities who almost always wear hats with stiff rims.

The worst of all shapes of hat is the high hat, which must necessarily fit close and tight on account of the large surface it exposes to the disturbing action of the wind.

Ventilation of the hair is also a matter which the hat interferes with seriously. Savages who wear no artificial head-covering at all are seldom troubled with baldness, while among civilized nations, the boys of the famous Blue Coat School in London, who are never allowed to wear a hat either in winter or summer, suffer no inconvenience from either cold or heat, and almost without exception have fine heads of hair. Light and air, therefore, appear as necessary to the growth of the hair as to that of the vegetable, which it so much resembles.

The wearing of night-caps is no longer common, and it certainly never was a practice conducive to the proper health of the hair. To women, whose hair is apt to become tangled, they may prove of some service, but the same result could be better obtained by a little pains taken in loosely braiding the hair before retiring.

Mental Strain as a Cause of Baldness.

Mental activity certainly seems to be a pre-disposing cause of baldness of great importance. The activity of the brain draws more blood to the head and heats the scalp, while at the same time the volume of blood which ordinarily goes to nourish the roots of the hair is diverted and diminished.

Dr. Eaton has found, by actual counting of heads, that baldness was more common in the intellectual and educated classes than among the uneducated. In the audiences attendant upon the opera and the churches of Boston from forty to forty-five per cent. of the men were bald, while the percentage was only from twelve to twenty-five in the crowds visiting cheap museums and prize-fights.

Educated men are also more exposed to the action of hot lamps or other artificial lights which heat and cause the head to perspire, and at the same time dry the oil of the hair, thus diminishing its vitality in two ways. Educated persons are also more sedentary in their habits. Exercise of the body and increasing the circula-

tion of the blood in the scalp by rubbing or massage will be found useful preventatives of baldness in the case of brain-workers.

The Action of Salt Water on the Hair.

The direct action of salt water on the hair is considered prejudicial by most physicians. However, sea-bathing will not do much harm to those with ordinarily vigorous heads of hair. After the bath, however, the hair should be thoroughly rinsed out in fresh water and then wiped and rubbed with towels until thoroughly dry. This precaution is particularly needful with women having long and thick hair. Salt water also has a slight bleaching or lightening effect on dark hair.

The salt spray of the sea is said to produce a more rapid and premature graying of the hair than would take place naturally.

CHAPTER IV.

THE INFLUENCE OF THE GENERAL HEALTH ON THE HAIR.

At first thought it may seem that a chapter dealing almost entirely with the diet, bathing, exercise, constipation, and other related subjects, and their effect on the general health, is somewhat out of place in a book devoted to the subject of the hair; but when one considers that any long-continued disturbance of the human system is sure to react more or less on the health of the hair, and while recognizing of course that the hair is of vastly less importance than the general health, there is no doubt of the fact that very many cases of loss of hair arise directly from, or are largely influenced by, some specific or general disturbance of the whole system; and therefore the maintenance of the healthy condition of the hair and of the general health go hand in hand.

There are probably many who have not looked at the subject from this point of view and to whom the importance of preserving their falling hair will act as an additional stimulus to the more important duty of restoring the system, which has, by carelessness or neglect, been allowed to run down, to a healthy condition.

Of course dissipation, drunkenness, excesses, and the other attendant evils of an irregular and vicious life exert a powerful influence on the health of the body and the growth of the hair; but it is not of these troubles we intend to speak, for with them the remedy is plain—*stop*; but of the troubles of dyspepsia, constipation, loss of appetite, mental worry, neglect of the toilet, and lack of cleanliness, which injure the health of many otherwise innocent and blameless persons, and consequently reacts on the health of their hair.

Diet and Health.

All the growth and repair of the tissues of the human body come from or are dependent on the food that we eat. If this food is insufficient, if it is injurious, and what is, perhaps, more pertinent as addressed to our readers, if it is not

properly selected and eaten at the proper time and in a proper manner, there is sure to result a greater or less disarrangement of the system. Some persons have such good constitutions and strong digestive organs that they are able to make light of what would cause a serious disturbance in the average person's system; but there is no doubt that the diet and manner of eating of the great mass of American men and women are capable of considerable improvement, and of improvement which would soon be reflected in increased strength and health.

It is perhaps better when the disturbance of the digestive system is a violent one, which calls loudly upon the attention of the individual concerned, for then the cause is quickly appreciated and is avoided in the future; however, in the great majority of cases of over-eating, bolting, and taking of indigestible food, the organs do not make in the beginning violent demands for redress, but, while being weakened and injured, struggle along in a passive sort of way, doing what they can, until the strain becomes too great, and the individual finds that he is suffering from chronic dyspepsia, constipa-

tion, or one or more of the various symptoms of a disordered digestion. Then one must set to work to the difficult task of curing an evil which might have been much more easily prevented.

For this purpose resort is often made to quack remedies and patent medicines, or to the purges and pills of the regular physician, which may produce temporary relief at the cost of still greater disturbances in the future. Medicines may act as palliatives and temporary assistants, but the radical prevention and cure of irregular digestion lie in the *careful selection of the food we eat, in being in a proper condition of mind and body when we eat and digest it, and in eating it in a correct manner.*

The variations and peculiarities of individuals with respect to the different articles of food are such that no rigid set of rules can be laid down which will suit all persons; nor, for that matter, can a physician prescribe with certainty after one or even after several interviews a diet which will be an ideal one for the person concerned; the best judge in such matters, provided that one can control his appetite, which is not always the case, is the individual himself,

preferably acting under the general advice of a physician, but studying himself the action of certain kinds of food on his system.

He can in this way, without making sudden and erratic changes of diet, learn by experiment what kind of foods and what hours for taking them suit his individuality best, although of course it is not necessary to experiment with foods not generally accepted as healthful by physicians, such as cheese, heavy pastry, plum pudding, roast pork, nor to partake of any food at extraordinary hours or between the regular meal-times.

In general, the simpler the diet the better the health, but to confine one's self to only one kind of food is more harmful than to indulge in too great a variety. A certain amount of meat is necessary for most people, though, in the writer's opinion, Americans eat too much meat.

The following table gives the time, in hours and minutes, taken to digest a number of different articles of food, and indicating, in a general way, the tax on the system which each one demands in order to extract the nutriment therefrom, although, of course, roast mutton, which

takes three and one-quarter hours, is much more nutritious than rice, which takes only one hour; a certain amount of each of these classes of food is, however, necessary to insure the most healthful conditions:

Kind of Food.	Average Time to Digest.	
	Hours.	Min.
Apples, mellow, raw.....	2	30
Apples, hard, raw.....	2	50
Apples, mellow, cooked.....	1	50
Barley, boiled.....	2	00
Bass, striped, broiled.....	2	00
Beans, pod, boiled.....	2	30
Beans and corn—succotash.....	3	45
Beef, roast.....	3	00
Beef, salt, boiled.....	4	15
Beefsteak, broiled.....	3	00
Beets, boiled.....	3	45
Bread, corn, baked.....	3	15
Bread, wheat.....	3	30
Butter.....	3	30
Cabbage, raw.....	2	30
Cabbage, boiled.....	4	30
Cabbage (raw) and vinegar.....	2	00
Carrots, boiled.....	3	15
Cheese, old.....	3	30
Chicken, tender.....	2	30
Codfish, boiled.....	2	00
Custard, baked.....	2	45
Duck, roast.....	4	00

Kind of Food.	Average Time to Digest.	
	Hours.	Min.
Eggs, hard boiled.....	3	30
Eggs, soft boiled.....	2	30
Eggs, fried	3	30
Eggs, roasted	2	15
Eggs, raw	2	00
Eggs, whipped	1	30
Goose, roast	3	00
Lamb, roast	2	30
Liver, boiled	2	00
Meat and vegetables, hashed.....	2	30
Milk, raw	2	15
Milk, boiled	2	00
Mutton, roast	3	15
Oatmeal, boiled	2	30
Oysters, raw	3	00
Oysters, stewed	3	30
Parsnips	3	00
Pork, roast	5	15
Pork, boiled	4	30
Potatoes, roast	2	30
Potatoes, boiled	3	30
Rice, boiled	1	00
Salmon, fresh, broiled.....	1	45
Sausage, fried	4	00
Soup, barley	1	30
Soup, chicken	2	30
Tapioca	2	00
Tripe	1	30
Turkey, tender, boiled.....	2	45

Kind of Food.	Average Time to Digest.	
	Hours.	Min.
Turkey, tender, roast.....	2	45
Turnips, boiled	3	30
Veal, roast	4	30

The time taken for digestion of the different foods, as given in the above table, are from observations made by Dr. Beaumont, of St. Louis, Mo.

With a person of moderate or weak digestive powers there will probably be a much larger ratio than is indicated in the table between the time taken to digest an easily digestible food, such as rice or chicken, and that necessary for an indigestible one, such as boiled cabbage or roast pork, which may lie on the stomach all night.

Diet and Best Time for Meals for the Average Person.

For the ordinary business man, in moderate health and not engaged in severe manual labor, as well as for the great majority of women, a comparatively light breakfast will be found to be better than the substantial meal usually served

in most American households. To make a hearty breakfast and then immediately rush off and settle down to a hard morning's work is frequently a cause of dyspepsia and nervous prostration, as neither the stomach nor the brain can in such cases get the proper supply of blood to complete its task, because the system has not enough to work both at full pressure. A heavy lunch in the middle of the day, followed by active business, has the same objections. It is true that there are persons of strong constitution and superfluous health who can stand this sort of thing, and even seem for a time to benefit by a diet and method of eating which would soon kill one of moderate physique and digestive power.

Thus, a robust farmer or mechanic engaged in severe manual toil can take a large mass of indigestible pastry or fat, and, in fact, demands such things, because they stay by him, or, in other words, keep his stomach busy and relieves the feeling of hunger which is so much more pressing in the robust than the delicate; while the same diet served to persons of sedentary habits would throw his whole digestive apparatus out of order for some days.

The following breakfast menu will generally be found sufficient for those not engaged in active labor :

One or two soft-boiled eggs;
A little bacon or fish;
Toast, bread, or roll and butter;
A cup of coffee, cocoa, or milk;

for many people, however, the coffee might advantageously be forbidden.

Oatmeal, cracked wheat, or other cereal preparation may be substituted for one of the above, provided they be masticated properly, which is not generally done, because, as they are ordinarily served with milk and slip down the throat very easily, the tendency is to bolt them without mixing with the saliva of the mouth, which, with any food containing starchy matter, is a very necessary process to insure proper digestion. Also with many, but perhaps not the majority of persons, oatmeal and other coarse foods act too energetically on the lining of the intestines, irritating them and often producing alternate constipation and diarrhoea.

Between twelve and one, or a little later if

desired, a light luncheon may be made, which may include milk, unless it disagrees with the individual; a little cold meat may also be added, but not too much of it, and with some persons it had better, perhaps, be dispensed with altogether, particularly in summer, when it is better for nearly everyone to do without it. Besides these, some form of bread, rice, or some farinaceous pudding, and some fruit, either cooked or fresh, may be taken. Ripe fruit is especially beneficial and agreeable in warm weather or, for that matter, in any season.

The dinner, which should form the main meal of the day, should be taken in the evening, when one has the most leisure immediately after the meal and is least likely to be worried with business cares and other interruptions while partaking of it.

It may begin with soup in which not too much condiment or grease has been used, some fish, roast meat (but not roast pork), two or more vegetables, and a simple dessert, preferably some stewed or preserved fruit, which should not contain too much sugar. Pastry, except when properly made, that is, very thin and light, and

even then only occasionally indulged in, should be avoided.

To one who has been accustomed to more substantial breakfasts and luncheons the above dietary may on first trial seem unsatisfactory; however, a moderate degree of patience shown in persevering with it will, with most people, result in improved health and a greater amount of energy and spirits. Those who, after a thorough trial, find they are losing flesh or spirits may increase the amount, but perhaps had better also consult their physician to see if there is any abnormal reason why the indicated amount of food does not sustain them satisfactorily. The great difficulty in troubles with the digestion, however, is not the eating of too little food, *but too much, too stimulating, and too indigestible food.*

In England it is customary to take some biscuits or crackers and a cup of tea about four or five o'clock, the majority, even of business men, doing so, while in the household it is almost a universal practice.

While the writer does not recommend tea as a beverage, if the dinner is served quite late and one's appetite for it is not spoiled, those who

feel very hungry during the middle of the afternoon might try the experiment of taking something of the kind about half-past four. A feeling of moderate hunger, however, is by no means an unhealthy but rather a healthy indication.

The Mind and the Digestion.

The condition of the mind during a meal exerts a strong influence on the amount of food demanded by the stomach, the digestion of it when swallowed, and its final utilization in building up new tissues and replacing old ones.

While during the waking hours it is impossible for the mind to be entirely at rest, it is perhaps most nearly so when engaged in light, cheerful conversation on subjects of no serious importance, and it will generally be noticed that those persons who have the best digestions are those who are most easily diverted or amused, so that they can throw aside cares and worries and allow the full blood-supply to be used in the process of digestion, instead of diverting a part of it to carry on a serious train of thought. Reading of any kind, which not only occupies

the mind, but the eyes, should not be indulged in during meals.

The eyes, which are the most sensitive organs of the body and exert the most powerful influence of any on the condition of the mind and spirits, are frequently the source of nervous irritability, as the result of fine needlework or reading poorly printed matter in a bad light. Children often suffer from debility and nervous irritability brought on by such causes, and with them, as with older persons, the best course is to remove or lessen the source of the evil, rather than to endeavor to counteract it by adopting a freak diet, as is often done, such as discarding entirely the use of meats, sugar, or fats, or making the breakfast exclusively of oatmeal, or subsisting largely on milk; such a course does but little, even temporary, good, while it lessens the general power of the digestive organs.

The passions—remorse, envy, jealousy, irritability, discontent, and undue excitement of any kind—when indulged in while eating, act in a threefold manner to the detriment of the health; they take away the appetite, they interfere with the digestion of the food that is taken, and they

prevent proper distribution of the nutriment that is finally assimilated.

Mastication.

The lack of proper mastication or chewing of the food is, especially among Americans, the cause of much of the dyspepsia and other disorders of the digestive system; for not only must bulky food, such as meat, bread, etc., be broken up by the teeth in order to be swallowed, but these, and all other kinds of food, even such as is soft and semi-liquid, must be thoroughly mixed with the saliva of the mouth to insure proper digestion. Many people when taking food which is easily swallowed do not allow it to rest in the mouth at all, but swallow or bolt it as quickly as possible. A certain amount of chewing or mixing of the food with the saliva should be undergone by every particle of it that enters the mouth, no matter how easily it may slip down without taking this trouble.

The Use of Tea, Coffee, and Cocoa.

There is much dispute among physicians and others concerning the use of these stimulants.

However, there is not much doubt that many persons use them in excess, and a great part of the troubles attributed to them can be traced to this cause. It is evident that a large part of the human race manage to get along very well without these stimulating drinks, and therefore abstention from them is not likely to do anyone serious harm, while in the case of nervous and dyspeptic persons it will generally result in an improvement in the health. Both coffee and tea, but particularly tea, have an opposing influence on the saliva of the mouth and its action on starchy foods, and thus when taken in excess, and sometimes even moderately with certain persons, they delay digestion to a certain extent.

Of the three, cocoa is probably the least injurious, with coffee ranking next, and tea occupying the worst position as a cause of nervousness and indigestion.

The manner of extracting the principles from the bean, leaves, or powder is often faulty or carelessly done, and particularly so in the case of tea, from which only the light, gently stimulating principles which are first extracted by

the boiling water should be utilized, and the remainder thrown away and fresh leaves substituted for a further supply. The strong principles which are absorbed in the water by continued steeping, and color the liquid a dark brown, injure the lining of the stomach without benefiting the system in any way, as they consist of certain tanning agents which have no particular action on the nerves, but a very active one in interfering with digestion.

Coffee should be made by the dripping or percolation method, and not by the ordinary way of boiling the crushed grains, which more frequently results in a liquid more like slops than real coffee.

Coffee should not be taken in the evening, but, if desired, a small cupful in the morning at breakfast will not injure those in a fair state of health, and taken in this way it frequently has a pleasant, soothing action.

Much fluid of any kind should not be taken during meals, as the habit not only tends to cause one to wash down his food instead of chewing and mixing it with the saliva, but it also dilutes the fluids of the stomach and diminishes

their action in the process of digestion. A glass of water may be consumed at intervals during a meal, or even a glass and a half, but the use of ice-water and other cold liquids and ices which chill the stomach should be avoided.

Sugar as a Food.

Sugar and other sweets are more useful in winter than in summer, as they are sources of heat and energy. The craving of children for sweets is a healthy desire and may be gratified to a reasonable extent. When taken in excess just before or during the early part of the meal they diminish the appetite and hinder the digestion of the other food.

Spices and Condiments.

Vinegar, salt, pepper, mustard, and other spices, when used in moderate quantities, are beneficial; used in excess, they irritate the lining of the stomach and intestines and disturb the action of the liver. There is always a tendency in their use to gradually increase the amount of the spice as the taste becomes accustomed to it, and this inclination should be

guarded against. Common salt is one of the absolute necessities, for it is the source of supply of the active constituent of the gastric juice, the digestive fluid of the stomach. More of it is perhaps necessary with a meat diet than with other kinds of food. The use of pickles, much vinegar, or a large amount of salad dressings should be discouraged.

Butter and Fats.

The maintenance of the system in a proper condition demands the use as food of a certain amount of fatty principles. In general the action of fats on the system is similar to that of sugar, with which they are closely related in their chemical constitution. The dislike which many children have to eating fat should be overcome by accustoming them to eat a little at a time, and gradually increasing the amount.

Water.

Most of those persons whose occupations are largely of a sedentary nature do not drink sufficient water. This is particularly the case with women. A certain amount of water should be

taken with every meal, but not a large quantity, and it should not be ice-water; water which has been cooled to a moderate extent in the refrigerator, without the insertion of ice, is to be preferred, for, besides the chilling of the stomach, the ice often contains disease germs, especially when cut from rivers and ponds polluted by sewage. Ice-water taken when the body has been warmed by severe exercise or when overheated, as is the common custom, is injurious, not only to the stomach, but to the whole system; when taken at all it should be drunk in small quantities at a time and very slowly.

Much water, or, in fact, any liquid, should not be taken for some time after meals, but the greater amount of what we drink should be taken when the stomach is empty or nearly so, that is, from about two to three hours after a meal, depending somewhat on its heartiness, to a few minutes before the succeeding one.

Alcoholic Beverages.

The remarks on the subject of tea and coffee apply also, but to a much stronger degree, to the use of alcoholic drinks. It is certain that in al-

most all cases the abstainer from alcohol in any form does not suffer from any bodily ailment in consequence of his self-denial, while many serious disturbances of the system, such as nausea, loss of appetite, catarrh of the stomach, cirrhosis of the liver, and numerous other diseases may be traced directly to its use, to say nothing of the loss of nervous energy and social and business injuries caused by its use in excess.

Certain persons are particularly susceptible to the influence of any stimulant—even tea and coffee affect them adversely—and these should not indulge even temporarily in any form of alcoholic drink.

When taken moderately, however, the use of unadulterated light wine or beer does not in general exert any harmful influence, while in some cases nervous and debilitated persons are kept in better health and spirits by their occasional use; particularly is this true of good, well-brewed beer, which seems also to have a slight laxative action.

Active persons can take more alcoholic stimulants with less injury to their systems than those who are sedentary in their habits, and those in

damp and cold climates more than the inhabitants of a stimulating or warm one, because in the former cases the alcohol is more quickly expelled or eliminated from the system than in the latter.

Exercise and Eating.

Neither hard mental nor physical exercise should be indulged in either just before or just after meals. When physically tired, a short quiet rest should be taken; and when mentally fatigued, either a short walk in the open air or a rest, preferably the former.

Those who have been thoroughly exhausted by long physical tasks, such as bicycle riding, foot-ball, long walks, etc., should not eat until they feel relieved of the excessive fatigue caused by their exertions; in such cases at least a half hour should be spent in resting before eating anything, and in cases of great fatigue an hour. Drinking under such circumstances should be done moderately and slowly.

Tight Lacing.

Many of the numerous cases of digestive troubles with which women suffer may be traced

directly to the habit of tight lacing. The corset compresses and forces the stomach and liver downward, and not only interferes with the proper working of those organs, but also the disturbance thus created may affect the kidneys and intestines.

Biliousness, headache, dyspepsia, constipation, fading or yellow complexion, falling out of the hair, and other troubles more peculiar to women frequently arise from this cause.

Naturally, those women having strong constitutions suffer less on this account than those who are physically weak and nervous. In young women and children the use of tight corsets is more harmful than in persons of mature years, as, on account of their youth, the injuries do not make themselves manifest and demand redress at the time, but later on in life, when a cure is much more difficult.

Constipation.

This is one of the most common causes of general ill-health, and while it does not of itself often result fatally, it interferes with the proper nutriment and development of the system, as

indicated by sallow complexion, baldness, and falling hair; causes vertigo and general lack of energy, headache, and nervous depression, and, above all, renders the system more susceptible to the attacks of more serious specific diseases.

Persons whose occupations are of a sedentary nature are more subject to constipation than those whose callings demand manual labor or an active outdoor life. It is particularly common in women, and is in many cases increased or brought on by motives of false modesty or neglect in responding regularly to the calls of nature. The displacement of the digestive and related organs by tight corsets, as described in the preceding paragraph, is also a fruitful cause of this complaint.

The most common and, in fact, almost universal treatment is to resort to the use of pills and other purgative medicines, and the advertisements in the newspapers show the extent that the public is given to the purchase of patent medicines and pills for this purpose. While most of these advertised remedies correspond in their composition to the formulas of physicians' prescriptions, many are much too strong and

gripping for the ordinary person, and each dose of them produces a severe and unnatural strain on the system. Persons who are especially susceptible to the action of a cathartic, and many constipated persons are so, will often find that the half or quarter of the ordinary pill will produce the desired effect with much less disturbance and inconvenience.

The practice of taking even the best of medicines for this purpose is, however, only a temporary expedient, for as each dose lessens the natural tendency of the organs to relieve themselves, an increased amount of the medicine is demanded as time goes on to produce the same effect, until the amount which finally becomes necessary is so great that it affects the other organs and disturbs digestion and nutrition. The resort to the use of medicines, therefore, should always be accompanied by taking physical measures and regulation of the diet to assist them, as described hereinafter, and an effort should be made to reduce instead of increasing the dose, until it finally becomes unnecessary altogether.

The true and, in the end, the only efficient

remedies are the regulation of the diet, the training of the organs to a regular routine or habit, and certain physical exercises which strengthen the abdominal muscles and increase their activity; these may be supplemented by a number of simple and natural expedients, some of them of a psychological or mind-influencing nature, which in different persons seem to be of service in producing the desired effect. These will be described at the end of this article. The use of enemas, injections, and other artificial aids are open to the same objections as pills and purges, being only temporary in their action, and should only be resorted to on physician's advice.

Diet in Constipation.

The peculiarities of different persons with reference to the action of different articles of food are so varied that no specific dietetic schedule can be formed which will answer the purpose in all or perhaps in any great majority of cases.

The person himself is in the best position to ascertain the results of the use of different foods on his system, and he should therefore study

carefully their action and form for himself a dietary which will nourish him properly and at the same time answer the purpose desired.

Foods, also, vary considerably in their action on the bowels; milk, eggs, sugar, meat, and other highly nutritious and easily assimilated foods, which leave but little residue, are to most people constipating in their action, although on some persons milk has a cathartic action.

Oatmeal, grits, cracked wheat, brown bread, coarse corn-meal, and other coarse and rough foods irritate and increase the activity of the bowels. When they do this to a moderate extent, constipation is prevented; but excessive rasping action and irritation cause alternate diarrhoea and constipation and a permanent tendency to the latter state.

Vegetables, fruits, and other foods which leave a large amount of residue, and whose juices in many cases have a certain laxative effect, have perhaps the most favorable action in this trouble; but when taken in excess they may produce the same result as an excess of coarse foods.

Representatives of each class of the above-described kinds of food should be found in the

dietary of each person, and it should be his endeavor, not to indulge exclusively in any one kind of food, but to properly proportion the amounts of each to produce the best results.

The following articles of food and drink have a favorable action in keeping the bowels free: cold water, taken especially when the stomach is not engaged in the process of digestion; buttermilk, which is a particularly healthy drink suitable to most persons; cider, grapes, oranges, apples, prunes, pears, peaches, and other fruits, raw or cooked (but particular pains should be taken to see that they are ripe), lemonade, honey, salmon, sardines, herring, vegetables of nearly all kinds, especially spinach, green peas, cauliflower, cabbage, radishes (radishes are, however, somewhat indigestible), rhubarb, salad, rye or whole-wheat brown bread.

Huckleberries, cheese, strong tea, coffee, cocoa, sugar, and chocolate are generally constipating.

Some of the articles mentioned above are not liked by certain persons, others are not suitable for those having weak digestions, and still others should not be indulged in together, such as cider

and cabbage, lemonade and buttermilk. Common-sense should, however, prevent any such unfortunate mixtures, and the list is long enough to permit a wide variety of choice.

In general, therefore, it may be said that any strained or peculiar diet is not beneficial, for while it may be intended for, and perhaps actually answers, the purpose of relieving one set of organs, it may be working injury to others or to the general system.

While, therefore, a person suffering from constipation should not attempt to go entirely without any of the most nourishing class of foods, such as eggs, milk, meat, fat, sugar, butter, etc. (although, perhaps, some of them may be omitted from his dietary), for, although they do not stimulate the action of the bowels, they are still necessary to the growth of the body and the maintenance of health and energy, he should give a predominance in his diet to those foods already indicated which encourage and cause a moderate degree of activity on the part of the bowels.

Among simple expedients which are found beneficial by some persons may be mentioned

the drinking of a glass of cold water just after rising in the morning, or others find a glass of cold or warm water just before going to bed has a similar effect. With some men a cigar after breakfast produces an action, and with others a short walk after breakfast answers the same purpose.

The Influence of Habit.

The influence of the will and mind and the formation of a regular habit are the most powerful factors in overcoming chronic constipation. But, with reference to the former, persons should not allow themselves to become over-anxious and worry unduly about not having a movement of the bowels at a regular time, as such a condition of mind tends to aggravate the trouble; delay of the action for a day or two, if not a regular occurrence, is not a serious thing.

The appointing of a regular time for the movement of the bowels and the persistence in going to the closet at that time, no matter whether there is any inclination to do so or not, are of the greatest importance, and the visit should never be omitted.

The best time is shortly after breakfast, and, even if there is no apparent prospect of an evacuation, one should visit the closet and wait there from three to five minutes; but any excessive straining should be avoided. Should there be no evacuation at that time, one need not delay further, but wait until the following morning, unless nature should in the meantime give strong evidence of a desire to evacuate.

Influence of Exercise and Massage.

An active life, gymnastics, and, in fact, almost any sort of exercise, particularly those which bring the abdominal muscles into play, are beneficial in cases of this trouble.

Exercise on the horizontal bar, riding horse-back, climbing, skating, rowing, bicycle riding, etc., if not carried to excess and in too hot weather, when the perspiration lost is apt to produce an injurious effect by drawing off too much fluid from the body, may be mentioned as among the most useful and enjoyable.

There are also many exercises which can easily be performed in the bedchamber or elsewhere in the house, and such are best done either just

before going to bed or just after arising; among them may be mentioned stooping down and touching the hands to the ground, or as nearly as possible, while keeping the knees straight; swinging the body from the hips up, alternately right and left; squatting down and rising up, or lying on the back on the bed and drawing the knees quickly up to the chest and back.

These exercises should not be done in a violent manner, and at first only a very few repetitions of each should be attempted, increasing the number as practice lessens the consequent fatigue and soreness.

Massage or kneading and rubbing of the muscles of the abdomen is frequently of service; but the inexperienced person should either receive some instructions from his physician or go about it very carefully and gently.

Rolling an iron ball, weighing from four to six pounds and preferably covered with a soft cloth, around the circumference of and across the abdomen is recommended by a number of physicians. To do this one lies on his back in bed and merely allows the weight of the ball to exert the pressure, pushing it around, gently and

slowly, so as to describe a circle, or the ball may be rolled back and forth across the upper abdomen.

This exercise is best done early in the morning when the stomach and upper bowels are empty. The surface of the abdomen may also be massaged by gentle kneading and rubbing with the hands. In general, exercise is better suited than massage for thin or moderately fleshy people, while massage is more adapted to those who are very fleshy or advanced in years.

Bathing and the Care of the Person.

A condition of cleanliness which can only be accomplished by frequent bathing is essential to a proper state of health. The sebaceous or oil-glands of the skin, whose purpose is to give forth oil to properly lubricate and preserve the skin and hair, are constantly at work, and much of this oil combines with the dirt and waste skin which is continually peeling off to form a coating which plugs up and stops the action of the perspiratory glands, and thus causes waste and even noxious matter to be retained in the system.

Soap and water are the best means for remov-

ing these accumulations, and not only does the bath serve this purpose, but it also acts as an agreeable stimulus and tonic to the nervous system.

For healthy persons there is nothing to equal the cold bath as a means of cleanliness and general stimulant, without any injurious after-effects. The best time to take a cold bath is just after getting up and before having one's breakfast. Should there be no bath-room in the house and the use of the tub be found inconvenient, a very good substitute can be made by taking a sponge bath, for which the only requirements are a sponge and the wash-basin. Whatever means are adopted, the cold bath should be taken quickly and the motions be made vigorously so as to promote circulation and hasten the reaction which in healthy persons always sets in during the rubbing dry with the towel. This should also be done briskly, but not too roughly in case one suffers from a tender skin.

The reaction is always accompanied by a tingling of the skin from the increase in circulation and a sensation of warmth and well-being, which is one of the chief benefits of the daily

bath; however, should by any chance such a feeling not result, it is evident that one is not in good condition to withstand the shock of the bath, and it should not be continued; or taking the chill off the water or air of the room may be tried to reduce the shock.

Many nervous people are much benefited by a daily cold bath, which in their case should not be taken under too rigorous conditions. They should begin the practice cautiously, and find out gradually what degree of cold they are able to stand and yet have a good reaction.

To accomplish this the practice of taking a cold bath may be begun in the summer, and the system can then accustom itself to the gradual change in the temperature which takes place as winter approaches; or one may begin with the use of tepid water, and gradually use colder and colder water as the system gets used to the shock.

It has been noticed that those who are accustomed to bathe frequently in cold water are less liable to catch cold than those who do not follow this practice.

When one is physically exhausted the cold bath should not be indulged in.

The warm bath should be taken just before going to bed; it produces an almost opposite effect to that of the cold bath, quieting the nerves and producing a desire to sleep, and may be taken both for the purpose of soothing the nervous system after excitement or mental fatigue or of relieving fatigue consequent on physical exertion.

For the mere purpose of cleanliness the tepid bath is the more desirable, and this should be taken at least once a week.

One should not bathe for two hours after a meal, as the consequent diversion of the blood from the stomach to the surface of the skin interferes with digestion.

Turkish and Russian baths, while not necessary for those in health, are nevertheless a luxurious form of enjoyment to many, and are, besides, beneficial to those who suffer from rheumatism or whose muscles have been strained by great exertion.

The massage and rubbing certainly remove much more dirt and waste skin than the average individual can do with his own personal efforts.

Ventilation.

The window of the bedroom should always be open to a certain extent, and when unoccupied should be wide open. Rooms heated by steam, furnaces, or stoves should be supplied with basins of water to preserve the humidity of the air.

The germs of consumption are frequently transmitted by breathing and rebreathing the air of a crowded room where consumptives are present.

Clothing.

Even when the summers are quite warm, a thin woollen shirt next to the skin will perhaps be found better than any other material for those who can wear wool. The outer clothes should be adapted in weight to the season. Garters, braces, etc., which compress the arteries, should be abandoned and substitutes found. The feet will be much more comfortable if the shoes are changed every other day, and two pairs of shoes will be found to last longer and look better when worn in this way than when the same two pairs

are worn out in succession by continuous wear of each.

Vacation.

Nothing so tones up a debilitated body and mind as a short absence from the cares of business, spent among pleasant and diverting scenes. Everyone engaged in business should have at least two weeks' vacation during the year.

Some, however, recreate so violently that they nullify the benefits of the change; violent and unaccustomed exertions should not be attempted. For those much exhausted or very active in their business a quiet rest among pleasant companions will perhaps be found preferable; while travel or moderate exercise will suit better those who are tied down to desks and counters.

Hobbies.

A change of work acts almost as well as a complete rest, and most persons are benefited both in mind and body by taking up a hobby—something which is widely different in its nature from their regular business, which will engross their attention in their leisure hours, and prevent

them from thinking and worrying about business cares.

Among favorite hobbies may be mentioned reading, either general or along some special line; stamp, book, coin, china, and book-plate collecting; cycling; breeding of dogs, poultry, song birds, etc.; photography, microscopy, botany, astronomy, and other scientific subjects; light mechanical work; and for those whose tastes are inclined that way, artistic work, painting, drawing, decorating, music, etc.—in fact, one may make a hobby of any line of work or the collection of any kind of object, the essential thing being that it shall interest and absorb the attention of the person concerned. It need not necessarily be an expensive one, for just as much benefit can be had from a hobby which only costs a few dollars a year as from one which demands the expenditure of thousands, for it is the personal interest and the absorption of the mind in the subject, and not the relative expenditure, that does the good.

CHAPTER V.

DANDRUFF, FALLING HAIR, AND BALDNESS— THEIR CAUSE, PREVENTION, AND CURE.

Dandruff.

Probably eighty per cent. of the cases of baldness are wholly or in part traceable to the presence of dandruff in the hair. We have already spoken—in the chapter devoted to the care of the hair in health—of the contagious nature of this disease, and, like most other germ diseases which thrive amidst filth and dirt, the prevention lies in cleanliness; for dandruff can not only be prevented, but in many cases completely cured, by the simple means of keeping the head clean with moderately frequent shampoos or washings with soap and water or borax and water.

It is true that there are persons having extraordinarily strong and vigorous suits of hair who suffer from dandruff without any apparent decrease in the vigor of their hair, and consequently

dandruff has been considered by some ignorant persons as indicative of a strong head of hair; in such cases, however, it is the superior vigor of the hair which causes it to thrive in spite of the injurious presence of foreign and dead matter on the surface of the scalp.

Persons suffering from a weak or debilitated state of health are much more liable to an attack of the disease than those whose vigorous health repels the attacks of the disease germs; and, also, they naturally have more difficulty in ridding themselves of the trouble when it is once established if their health continues to be infirm.

To keep in good health, therefore, or, if in a poor state of health, to endeavor to restore it by following the directions given in a previous chapter on that subject, is of the greatest importance in the prevention and cure of this disease.

As has already been stated, the great majority of cases of dandruff are caused by the use of the comb and brush of another person infected with the disease, either in one's own household, while travelling, or at the barber's; a much less number of cases are communicated by accidental

contact with the heads or hats of an infected person or by particles of dandruff conveyed by the air.

The disease commonly called "dandruff," and of which the medical name is "seborrhœa," is usually manifested in one of two forms, concerning which there is some dispute among physicians as to whether they are two distinct and separate diseases or merely two forms of the same disease. In one form the scales are thin, dry, and brittle, and are constantly falling from the hair and covering the coat-collar as with a fall of fine snow; this is called *seborrhœa sicca*, or dry dandruff; in the other form, called *seborrhœa oleosa*, or oily dandruff, the scales or crust of scales, mixed with and held together by greasy matter, collect and remain on the surface of the scalp until disturbed by the brush, comb, or fingers. There also seem to be forms or stages of the disease in which the conditions are intermediate between those given above.

But for all practical purposes these distinctions may in general be disregarded, as the treatment is practically the same for both forms, except that in very severe cases of the oily kind

it may require more attention and possibly some additional measures for removing the deposit than in the dry form.

The methods of curing the trouble may be divided into five general classes, and of these the first three will be found sufficient in the great majority of cases, and the last two had, perhaps, better be only resorted to in very severe cases and in those in which a persistent course of the first three methods of treatment has failed to effect an improvement or cure.

Before describing these methods of treatment it may be well to remark that with dandruff, as well as with any other disease of the hair or scalp, the means and precautions which have been given in a preceding chapter for the preservation of the hair when it is in a healthy condition have, when any disease is present, a triple importance, and any causes affecting adversely its healthy condition, such as tight-fitting hats, lack of ventilation, want of cleanliness, make increasingly rapid inroads when their influence is combined with that of dandruff or any other specific disease.

Besides being effective for the cure of dan-

dandruff, the first three methods of treatment will be also found useful for those who wish to increase the growth of a scanty but otherwise healthy head of hair.

These methods of treatment involve—

1st. Measures for the restoration or improvement of the general health, if that be affected, as it commonly is.

2d. Measures for cleansing and keeping clean the hair and scalp.

3d. Measures for increasing the circulation of the blood and developing the flesh of the scalp.

4th. The use of antiseptic lotions and drugs, with a view of destroying or driving off the germs which cause the disease.

5th. The use of oils, ointments, and similar substances for mechanically removing the dandruff in severe cases, and at the same time medicating the scalp.

The Improvement of the Health.—In the great majority of cases of dandruff it will be found that, even if the person's health is not run down and debilitated, it is nevertheless capable of improvement. The means for restoring and improving the health have been so fully elaborated

in the chapter devoted to that subject that it is only necessary to refer the reader to it for instructions in following this very important part of the successful treatment of dandruff.

The Cleaning of the Scalp.—Shampooing with ordinary good toilet soap and water, or preferably with borax and water, or using the borax and soap together, is both the simplest and best means of cleansing the head from the presence of particles of dandruff, and, if continued systematically, of finally ridding the scalp of the germ which causes the disease. Shampoos, however, should not be taken too frequently; three or four times a week should be the maximum number, and twice a week will be found to answer the purpose in the majority of cases. It is preferable that the person concerned should himself apply the shampooing fluid and do the subsequent washing, and this can most conveniently be done just before going to bed, which is perhaps the best time, or just after rising; in either case the hair should be immediately and thoroughly rubbed and wiped until dry, and one should not go out in cold weather until it is dry. Some persons prefer to

use the yolk of an egg, or an egg beaten up with warm water; it does not, however, answer the purpose as well as soap or borax, as it has only a mechanical action on the particles of dandruff and no chemical action on the grease and oily matter attached to the scalp. When used it should be followed by a thorough washing of the scalp in lukewarm water to remove the portions of the egg that may remain in the hair.

If after several washings or shampoos the hair is always found to be dry and brittle at the expiration of about twenty-four hours from the operation, at the end of subsequent shampoos, when the hair has been dried, a little lanolin, cocoanut oil, or oil of ben should be rubbed well into both the hair and scalp, or the following preparation will be found to be an agreeable one for this purpose:

Lanolin	One part
Glycerine	One part
Rose-water	One part

Put the ingredients in a bottle and mix by thorough shaking, when it is ready for use, or it may be compounded by a druggist.

In the majority of cases it will be found un-

necessary to use any oil (and, when not absolutely necessary, it is better to do without it), for the cleansing process has opened up the pores of the skin and stimulated the oil glands, so that there is an abundant supply of oil to replace that which the washing has removed, and the hair will generally, some hours after the washing, be found to be more oily than before.

As previously remarked, the ordinary barber's shampoo liquor, which usually owes its cleansing properties to the strongly alkaline carbonates of potash, soda, or ammonia, is too powerful in its action, and is apt to do more harm than good when used so frequently for cleansing the head as the average case of dandruff requires.

Massage and Development of the Scalp.—The exercise and rubbing which the scalp undergoes during the process of shampooing and drying, as well as the extra amount of brushing, which is both necessary and beneficial in cases of dandruff, do much to promote the circulation of the blood among the roots of the hair, and they receive a greater amount of nutrition.

The same effect is produced, but in a more marked degree, when one rubs, pinches, or rolls

up the surface of the scalp with the fingers; the flesh of the scalp is developed by the same cause, and more room and protection are furnished for the hair roots and for the blood-vessels, which latter are, with a thin scalp, very much subject to compression by the skin drawing tightly over the bone. This is well illustrated in the case of women, whose scalps are fleshier than those of men and contain more fat, so that they are able to produce and sustain a more abundant crop of hair.

A skilled massage operator can, of course, be had to perform this operation, but this is expensive, and with a little patience and perseverance one can easily learn to do it for one's self almost as well.

Care should be taken not to pull and strain the hair itself any more than can be helped. Not only the portions of the scalp which are most affected by the disease, such as the crown and front of the head, should be gone over, but also the sides and back, though less exercise will suffice for them.

In going over the surface of the scalp one should be careful to do it systematically, so as

to cover the surface evenly; begin, for instance, at the front of the head, and roll or pinch the skin there from twenty to forty times, then move the fingers back an inch or so and repeat the operation, and so on until the whole top of the head has been exercised; then do the sides of the head in the same manner, one hand on each side, but doing only half the number of rollings or pinchings performed on the top of the head, and in the same way the back of the head, and repeat the operation if desirable.

Brushing the head for five or ten minutes daily with a brush which has not very stiff bristles will also be found an excellent method for stimulating the scalp. The brushes sold in pairs, and without handles, under the name of military brushes, are the best for this purpose, and one can be used in each hand. The chief difficulty with brushing is that the tendency is to overdo it, and, by brushing too hard, scrape and lacerate the skin of the scalp as well as strain the hairs or even pull some of them out. A moderate amount of fairly gentle brushing, combined with a massage treatment, will be found much the better course.

Antiseptic Applications.—While it is generally assumed by the medical profession that dandruff is a germ disease, or one which is caused by the presence of a bacterium or minute parasite, the habits and exact location of the germ have not been as yet determined; it is presumed, however, that it exists in the pores of the skin, and probably also in the hair sac or root.

The action of liquids and drugs prejudicial to germ life and at the same time not harmful to the human system when applied externally—such, for example, as petroleum, sulphur, weak solutions of bichloride of mercury, and similar preparations—is, therefore, to a certain extent limited, as these do not penetrate into the skin. However, there is no doubt that in many cases they do assist materially in accomplishing a cure.

The mixture of precipitated or lac sulphur with vaseline—one drachm of the sulphur to one ounce of vaseline—or a combination of vaseline and lanolin, with the addition of sulphur, which is the active principle, the others serving merely as holders or carriers, will be found useful.

Sulphur mixed with soap is also sold for this

purpose under the name of sulphur soap. This, however, generally contains the coarse or ground sulphur, and even when made with the lac or fine sulphur it is doubtful whether it does much good, as the sulphur is not brought into intimate contact with the scalp for any length of time. The mixture of sulphur and vaseline may be put on in the evening and washed off in the morning, wearing in the meantime an oil-skin cap or wrapping the head up in a soft cloth to prevent soiling the pillows; or a smaller amount of it may be kept on for some days. It is not necessary to put it on the hair itself, but on the scalp where the germ is concealed, and where it may be applied by raising the hair with the fingers of one hand and rubbing it on with the balls of the fingers of the other hand.

Petroleum or ordinary kerosene may be used in the same way, soaking the head in the evening and washing it thoroughly in the morning. Petroleum has the objection of having a very strong odor which it is difficult to disguise or get rid of for some time afterward. After washing the head thoroughly with soap and water and partially drying it, some rectified alcohol,

diluted with about half its weight of water, may be applied freely to the hair and scalp, or bay rum may be used; these help to evaporate the remaining petroleum and lessen the odor, although it is difficult to get rid of the last traces, which may be masked or disguised with cologne or other perfume.

Only the heavy petroleum, such as is used in house lamps, should be used; gasoline, benzine, or other petroleum extracts sold for cleaning purposes, should never be employed, as they are too inflammable; even with the ordinary lamp oil the greatest care should be taken not to go into a room where there is a fire or light of any kind.

Perhaps, on the whole, vaseline or petrolatum will be found a more convenient application; but while it has similar properties to the liquid petroleum, of which it is a by-product, its action is somewhat more limited, as it does not reach the pores and surface of the skin so readily as the liquid. Even a short washing of the head in petroleum or an application for an hour or two during the day will do some good, and if continued will often cure the dandruff.

A very weak solution of bichloride of mercury may also be applied as an occasional wash. A thorough washing in several changes of water should follow the application. This substance, commonly known as corrosive sublimate, is very poisonous when taken internally. The druggist can, however, put up a very weak solution which can be applied externally without danger.

Removing the Crust in Severe Cases, and Subsequent Treatment.—When the disease is very severe, and at the same time has an oily tendency, a scurf or crust is formed by the combination of the scales and the oil of the head, and covers with more or less thick layers the surface of the scalp. When this is not very thick the washings and brushings previously described will keep it in check; but when it has been neglected and allowed to accumulate the best means of removing it is to saturate the head with some vegetable oil—sweet almond oil or olive or sweet oil—and keep it saturated for some ten to twenty hours, when the oil should be well washed out with soap and water. The head should be covered during the

time that the oil is on it with an oil-skin or rubber cap or bound up in some soft cloths. The oil should be applied as directly to the scalp as is possible, and to do this properly a medicine dropper or syringe should be used, and a little deposited on each square inch of the surface of the head where there is a crust. As much oil should be put on as the head will carry without troublesome dripping when the cap or cloths have been put on, and this may necessitate two or three goings over with the syringe. Of course one may pour the oil on the head and rub it in, but it is much better distributed with the syringe. Should the crust not be completely removed by the final washing, another application of the oil must be made, followed by a second washing. When the crust has been removed, the application of medicaments and of fluid washes and ointments for antiseptic treatment, as described in a preceding paragraph, may be commenced.

The shampooing and washing, however, are just as important as when no especial wash or ointment is applied; in fact, after from ten days' to three weeks' treatment with ointments or

washes, according to the nature of the medicine, it is better in many cases to discontinue them, and see if the means taken to restore or improve the health, shampooing, and massage will not complete the cure.

Ointments.—While ointments are often objectionable to the person concerned on account of making the hair so greasy, they are nevertheless easily applied and retain their activity longer than liquid applications, although they do not, perhaps, get to the affected parts so readily. They should not be made too thick nor applied too freely; a very little ointment applied to the right spot—that is, to the skin of the scalp, and not the hair—is sufficient. The finger, slightly smeared with the ointment, should be rubbed over the scalp, putting the hair aside with the other hand; or, perhaps better, have another person apply it. After going over the whole surface of the scalp, brushing the hair will be found to spread the ointment still more.

The following ointments are highly recommended by Dr. George T. Jackson, of New York, and may be substituted for the mixture of vaseline and sulphur mentioned above. Any

druggist can prepare them from the following formulas:

SULPHUR CREAM.

R. Ceræ albæ	3 vij
Ol. petrolate	3 v
Aquæ rosæ.....	3 ijss
Sodæ baborate.....	gr. xxxvj
Sulphur	3 vij

This has a slight odor, and, if this is an objection, the following may be substituted:

R. Hydrarg. ammon.....	℥j-ij
Hydrarg. chlor. mitis.....	℥ij-iv
Vaseline.....	3 j

The first contains sulphur mixed with borax, petrolatum, and white wax, while the active principle in the latter is the bichloride of mercury. It should be remembered that it is not recommended to use ointments or antiseptic washes except in very severe cases where there is much crusting, or where the washing, brushing, massage, and health treatment have failed to produce an improvement.

Falling Hair.

Almost invariably falling hair is due either to the presence of dandruff, sickness or ill-health, or to some other cause not immediately connected with the hair itself. Therefore, the main care should be to trace the trouble up to its fountain-head and endeavor to correct it there, rather than waste time and money in anointing the hair with restorers, oils, and lotions, which do not help it at all.

In cases of extreme dryness and brittleness of the hair there is certainly necessity, for the time being, for the application of oils for the purpose of temporarily replacing the natural oil which has ceased to flow, but almost always this stoppage is due to some cause remote from the hair itself, generally ill-health, dandruff, or neglect of cleanliness, and when this is relieved the natural oil appears again in sufficient quantities to lubricate the hair without any further artificial aid.

It would even seem that nature resents interference in the matter of the use of artificial hair-oils, for as these saturate the hair the demands made upon the oil glands of the scalp for the

natural oil are less, and these organs, having less work to do, decrease in size, and may even become permanently atrophied, so that the custom of using artificial oil on a healthy head of hair really diminishes its natural vigor, rather than increases it.

The use of most of the so-called "tonics" for restoring or preventing falling hair should also be discouraged, for the desired results can be more naturally and successfully attained by massage, cleaning, and attention to the health.

Most of the tonics used have for their base or active principle the tincture of cantharides, or Spanish fly, and the benefits which are occasionally attributed to them are largely due to the cleansing of the scalp which their use entails and the exercise and massage which it receives when they are rubbed in.

As already mentioned, there are many cases of falling hair due to sickness or some temporary disarrangement of the health which soon right themselves, particularly among women; and when, as often happens in such cases, hair tonics are used, the subsequent growing-in of the hair is credited to the tonic, although the hair would

have grown in again just as well if the tonic had not been used.

The following hair tonic may be used by those who desire something of the kind, but its use should be accompanied by physical treatment. It is perhaps as good as any proprietary preparation on the market, and better than most of them. It may be prepared from the following formula by any druggist:

Tincture cantharides	$\frac{2}{3}$ ss
Tincture capsici.....	$\frac{2}{3}$ ss-j
Ol. cocoa,	
Ol. ricini.....	āā $\frac{2}{3}$ j
Aqua cologniensis	ad $\frac{2}{3}$ iv

Shake well. Apply once or twice daily.

Among other medicinal substances used externally for restoring the hair and prevention of its falling out are salicylic acid, tincture of nux vomica, quinine, and strychnine. The three last may be more profitably employed internally as tonics in building up the appetite and general health. If, however, anyone should prefer an external application, it may be made by mixing one of these drugs with alcohol or vaseline, of

which the following formula will serve as an example:

Sulphate of quinine.....	One drachm
Alcohol	Two fluid ounces
Vaseline	Three ounces

To be rubbed well into the scalp.

Many persons troubled with falling hair think that they injure the hair and increase the falling by washing, combing, or brushing it; these operations are, however, necessary and beneficial, and if conducted with proper care, according to the directions given in the chapter on the care of the hair in health (as should be done, whether the hair is loose or not), there need be no fear of any actual injury being done to the hair, as that which is loose enough to come away by the moderate action of the comb and brush is dead, and its falling out is merely a matter of a day or two, sooner or later; besides, by remaining in place it only interferes with the growth of a new hair. Therefore, while it is, without doubt, a distressing thing, particularly to ladies, to see the comb or wash-basin filled with waste and falling hairs, it should be remem-

bered that the preservation of the remaining hairs depends on such attention, and means should be promptly taken to find out and arrest the cause of the falling, which generally arises from the bad condition of the scalp or of the general health.

Baldness.

The treatment of baldness rests on the same general basis as the treatment of weak and falling hair—that is, on the stimulation and development of the natural forces both of the scalp and body. With baldness, however, the prospects of a restoration of the hair are naturally much less than when there has been only a partial thinning out.

As long as the scalp can be irritated and reddened by a moderate rubbing with the hand or towel there is some hope of being able to produce a growth of hair by the action of massage, frictionating processes, the application of the electric current, or by the stimulating irritation caused by the use of medicinal principles such as cantharides. The Rev. John Wesley is said to have recommended the rubbing of the head

every morning with a raw onion until it became red, and the proprietors of the widely advertised Macassar oil directed that the head should be rubbed well with a towel in conjunction with the use of their remedy. In fact, it will be noticed that all remedies that have any reputation whatever require that the scalp shall be stimulated—that is, that a greater supply of blood shall be caused to circulate through its arteries.

Cantharides and similar stimulants have no direct action on the roots of the hair; in fact, there are no medicaments known which do have any really beneficial direct action. However, by their irritating action on the skin they cause an extra supply of blood to circulate among the hair roots, which are thus stimulated to action, and in some cases to the sending forth of permanent hairs. But if the roots are dead and gone no hair can come forth.

Excepting in cases of temporary loss of hair through sickness or ill-health, the fact that the hair has fallen out of itself indicates that the scalp has become unable to support the growth of the hair or that the roots have been choked and killed by dandruff and may be incapable

of further growth. To produce a permanent growth of hair it is therefore not only necessary that the scalp be stimulated, but that it should be developed and increased in thickness and in blood circulation in order to sustain the new growth. Cantharides in many cases produces a growth of fine down, which the scalp, lacking the continuance of the stimulus, is unable to sustain, and the down gradually disappears as did the original hair.

One cannot use these irritating applications continuously, as they injure the skin when applied too often, or else it becomes less sensitive to their action. Therefore, the only way to permanently develop the scalp is by means of exercise, massage, or electricity, combined with a treatment for improving the health. With most men of middle or advanced age even this is impossible, as their vital force is no longer capable of producing a new growth of tissues; but among those who are exceptionally vigorous, and younger men, there is still a fair chance, if the roots are not dead, of starting and sustaining a new growth of hair by the increase of the circulation of the blood and consequent develop-

ment of the scalp, and by means of massage or similar agencies. The patient, however, should be in a good state of health and must observe a great amount of patience and perseverance in the course of the treatment. The simplest and perhaps the best means of stimulating the scalp and producing the slight irritation necessary to cause an increased circulation of the blood, is to take a rough towel and, holding one end in each hand, draw it back and forth, allowing it to bear or rub gently on the bald surface; this rubbing should be done very gently, particularly at first, until the person learns how much friction the head will stand without causing blisters or peeling off of the skin. The object is to produce an increased flow of blood, and when that is accomplished there is no need for further rubbing. From three to five minutes' action of the towel will generally effect this. If the towel be found too coarse and rasping in its action, a softer cloth may be substituted. However, if the person is in good health, and if, after a course of two months of this exercise, there is no perceptible increase in the thickness of the scalp or any appearance of down or fine hairs, it may be rea-

sonably assumed that the roots are past the effects of any stimulation and there is no prospect of restoration of the hair in any way.

Pinching, rubbing with the hands, brushing with a very soft brush, or, in fact, any exercise which causes an additional flow of blood in the scalp, may be substituted for the action with the towel. Those who prefer it can apply electricity, but the object and effect are the same in each case—to get an increased blood circulation—and it is more expensive and troublesome to apply than simple rubbing.

Electrical stimulation may be applied by professional operators, or a home apparatus may be constructed by procuring three to five cells, either wet or dry, connecting them up in series, and at the pole which is to be applied connect a brush with metallic bristles or a copper wire formed of a number of fine strands, such as is used for connecting incandescent lights, only the fine ends should be spread to cover as much surface as possible. The brush or wire may be applied to the head, and the connection through the body made by clasp ing a sponge wet with salt water and attached to the other pole of the battery.

Outfits for electrical treatment of different parts of the body are sold by many druggists, and one of these may be procured for this purpose.

Bathing the head in warm water and the application of hot fomentations have not met with much success in the treatment of baldness.

For those who prefer to use some sort of a tonic and liquid stimulant the following formula will be found as good as, if not better than, any advertised preparations on the market; in fact, all of these which have any intrinsic value whatever depend upon cantharides (which is the best agent) or some similar stimulant for their action.

TINCTURE OF CANTHARIDES.

For a mild application:

Powdered cantharides	$\frac{1}{4}$ ounce
Proof spirit	1 pint

For a stronger, and perhaps better, application:

Powdered cantharides	$\frac{1}{4}$ ounce
Proof spirit	$\frac{1}{2}$ pint

A better method of applying cantharides is in the shape of an ointment, which can be made by

mixing, in a slightly warmed porcelain mortar, from 1 part cantharides powder to 70 parts vaseline for a mild application, to 1 part cantharides to 25 parts vaseline for the strongest. Intermediate strengths can be made as desired. The liquid tincture of cantharides can also be added to vaseline to form an ointment more fluid than the preceding.

Another stimulating agent which has been favorably reported on is croton oil, which may be applied in a mixture with oil of almonds. It had better be first used in a weak application, and if this fails to produce any result, and does not blister the skin, the stronger preparation can be applied, or one of intermediate strength.

For a mild application:

Croton oil.....	6 drops (minims)
Oil of almonds.....	12 drachms

For a stronger application:

Croton oil.....	12 drops (minims)
Oil of almonds.....	4 drachms

Extract or tincture of crowfoot leaves has also been recommended.

If pustules or pimples appear, the use of the application may be suspended for one or two days. These applications may be applied once a day at first, and, later, twice a day.

Persons of nervous temperament, or those afflicted with an irritable skin, swelling glands, eruptions, or erysipelas should be very cautious in applying any of the above formulas, and in bad cases of the above troubles should not use them at all. In all cases it is better to make the weaker application first and afterward increase the strength if found convenient to do so.

CHAPTER VI.

SPECIFIC DISEASES OF THE HAIR AND SCALP.

Nearly all the specific diseases which affect the hair and scalp are caused by minute parasites or animal or vegetable growths whose diagnosis and destruction require experience and medical knowledge; hence, with the possible exception of lice, the treatment of any unusual trouble should be at once intrusted to a competent physician. With the exception of lice and barbers' itch, neither of which can be said to be very prevalent, the other diseases are of such rare occurrence that a mere mentioning of the name and characteristics is all that will be necessary here, particularly as they are of such a nature that personal treatment is out of the question.

Lice.

This is a tolerably common disease among children, particularly among those whose sur-

roundings are such that washing and habits of cleanliness are not frequently indulged in. These children often communicate the trouble to those of more careful parents, and it may also be communicated by domestic animals. It is more common among women than men, owing to their long hair and being more with young children. The louse does not really bite, but worms his proboscis or nose into the pores of the skin and sucks up its juices. The sores which usually attend their presence are caused by the scratching of the irritated parts by the person affected. There are several varieties of lice which affect the head, but the treatment is the same for all.

Clipping the hair is a very drastic measure, and, being never absolutely necessary, should not be performed in the case of a woman or girl, unless the latter is very young. With men and boys, to whom it is a matter of small importance, cutting the hair short will save some of the trouble necessary in applying other remedies.

Combing the hair with a fine-tooth comb, unless very thoroughly and systematically done, is rather ineffective for removing the louse itself, and has a tendency to injure the hair; however,

it is the only means which can be depended on to remove the eggs, which are attached in small ball-like forms to the hair, for on them washes and poisonous applications have no action until after they are hatched. The removal of the eggs is, therefore, fully as important as that of the louse itself, and as they almost invariably attend the presence of the animal, appropriate means for destroying both must be taken if a speedy cure is to be expected.

The lice themselves are readily killed by treating the hair with common kerosene oil or lamp oil of high fire test. This may be applied in the evening and washed off the next morning, but several applications will generally be found necessary. The oil should be thoroughly rubbed into and mixed with the hair, but it is not necessary to have the hair sopping wet with it.

While the oil is on the head it should be covered with a cap or wrapped in a cloth to prevent evaporation. After the application the head should be well washed with soap and water. Bay rum, cologne, or some other perfume may be then applied to disguise the smell of kerosene, which sometimes clings tenaciously to the hair.

The greatest care should be taken to avoid fire and light, neither a flame nor a spark of any kind being permitted in the room while the oil is on the head. Gasoline, benzine, and other very inflammable petroleum oils should not be used for this purpose. While kerosene oil is the most ready and cheapest treatment, the danger of fire, particularly with young and thoughtless children, is greatly to its disadvantage.

Another very good application is made by adding at the rate of ten to fifteen drops of carbolic acid to an ounce of alcohol or bay rum, and then wetting the hair thoroughly with the solution. This liquid is very poisonous when taken internally.

A solution of bichloride of mercury, in which from two to four grains are used to the ounce of water or alcohol, is another excellent lotion, and is perhaps the most efficient of all parasiticides. However, it is so highly poisonous when taken internally that it had better not be used on the heads of young children. These applications may be kept on several hours or all night, but a thorough washing should immediately follow them. Washing with soap and water or borax

and water has a very discouraging but not absolutely destructive effect on the lice. Tar water, creosote, and sulphur in the form of soap or powder may also be used, but are not so effective and thorough as the previously mentioned remedies.

Barbers' Itch.

There are really two entirely distinct diseases to which this name is commonly applied. They are, however, so similar in appearance and symptoms that physicians themselves frequently mistake the one for the other. The one is a species of eczema which affects the hairy regions of the face and neck; the other, which is the real "barbers' itch," is caused by a vegetable parasite, and, while affecting the same portions of the body in a similar manner, is much more contagious than the eczema. The treatment of the diseases, which should always be conducted by a physician, differs somewhat, as there are to the experienced eye certain differences in their appearance and symptoms. In eczema the hairs hold pretty firmly by their roots, there are usually abundant crusts or scabs, and when these are removed the skin underneath is generally smooth

and soft; on the other hand, in tinea, or “barbers’ itch” proper, the hairs are, when the disease is fully developed, so loose as to often fall out of themselves, the crusts are generally few and scarce, and the skin lumpy and hard.

The treatment of eczema involves the removal of the crusts by first softening them with olive or almond oil and then applying warm water with gentle rubbing. Shaving should be practised every other day, and will not be found so painful as would be imagined, particularly after the first two or three operations. The face may be frequently bathed with solution of castile soap or rubbed with ointments containing sulphur or white precipitate (chloride of mercury and ammonium).

In cases of the genuine “barbers’ itch” the removal of the crusts, if any are present, and the shaving operation may be conducted as described in the case of eczema. In general it is also necessary to pull out the diseased hairs by the roots, as they are affected with the disease right down to the root, and shaving does not remove all the diseased portion. This can be done on alternate days with the shaving process.

Before pulling the hairs the face should be well rubbed with almond or olive oil. The diseased hairs come out quite easily, but, as they are very brittle, they should be firmly grasped with the tweezers or forceps quite close to the skin. A lotion of corrosive sublimate, two or three grains to the ounce of water, should then be applied and rubbed well into the skin. This should also be applied twice or thrice daily; at other times, hyposulphite of soda, a drachm to the ounce of liquid, is a milder application, but less powerful in its action in destroying the disease germ.

Barbers' itch may be acquired in a number of ways, but, as previously mentioned, it is generally, as its name indicates, communicated by the barber or his instruments, particularly by damp towels and brushes used on the faces of other persons, and often by the barber's hands. There is generally much less real pain and itching than the appearance of the skin would indicate.

Favus.

This is a contagious disease affecting the scalp and hair and characterized by circular cup-

shaped pale-yellow colored crusts, about the size of a half or split pea, usually perforated by the hair and sometimes having an asbestos-like formation. It is caused by a vegetable organism. It is usually attended by an odor resembling that of stale straw or mice. The improvement of the health is influential in its cure, but treatment by a competent physician is absolutely necessary. It very seldom affects any but those living in unsanitary and unhealthy conditions.

Ringworm of the Scalp—Furfuracea.

This disease is characterized by circular or irregularly shaped scaly patches more or less bald and varying in size from that of a silver three-cent piece to a dollar. The color of these patches ranges from a slate color to a light bluish-gray. It is a disease common to children, and seldom met with in adults. It is highly contagious. The treatment must be conducted by a physician, as the disease is sometimes very obstinate. The disease is confined mostly to children of the lower classes.

Irregular Bald Patches.

The medical term for this trouble is alopecia areata. The patches may be circular and the size of a coin, ribbon-shaped, or, in fact, of any irregular form. They frequently come on very suddenly; often the hair falls completely out in a day or two, and generally only taking a few weeks to do so. The skin of the affected part seems healthy, as does also the remainder of the hair on the head. The cause of the disease seems to lie in the nerves of the region affected. There is no defined method of treatment, but if the person is not advanced in years the hair generally returns in a short time, often, however, taking several years to do so, and sometimes never coming back. It is, fortunately, not a very common affliction, and differs from the ordinary baldness in coming on very quickly and affecting any part of the scalp, often the back of the head.

CHAPTER VII.

FOR THE BENEFIT OF THE LADIES

“ O wondrous, wondrous is her hair—
A braided wreath of golden brown
That drops on neck and temples bare.”

“ The crowning glory of a woman is her hair.”

No one will gainsay that the hair is a subject of more importance to women than to men, and while most of the remarks in the other chapters of this book apply to them as well as to men, it has been thought best, at the risk of some slight repetition, to devote a chapter to those points of the subject which especially interest the fair sex, whose hair is by no means the least of their many charms.

To lose the hair, even partially, is one of the greatest misfortunes which can befall a woman, and, fortunately, the complete loss is exceeding rare among them; although, by taking a short walk through the shopping district of a large

city and observing the number of dealers in false fronts and other accessories, whose adjustment is a puzzle to the average male mind, one would imagine that partial baldness and scanty hair were quite prevalent among the frequenters of those regions.

To most men immersed in the cares of business the loss of hair comes as a matter of course, and its absence is such a common thing among their associates that its gradual disappearance in their own case generally causes no particular remark; nor, on the other hand, does baldness seem a very serious obstacle in the struggle for the favor of the fair sex, particularly when accompanied, as it often is, with a fair supply of brains, money, or substantial position; but the matrimonial chances of even a young and otherwise prepossessing woman with a bald head, or even a partial degree of baldness, may be promptly set down at zero; while there is no physical charm more attractive to the masculine eye than an abundant, fine colored head of hair tastefully arranged and crowning a beautiful face. Often features not in themselves graceful and attractive are redeemed by beautiful hair.

Arrangement of the Hair.

With most persons the cast of the features and the dimensions and shape of the head demand a particular arrangement of the hair which shall harmonize with them, if the best is to be made of one's appearance.

Most women, particularly in the United States (where more different styles of wearing the hair may be seen side by side than in any other country), know and follow that style of dressing the hair which by observation and experience they have found most becoming; but the wish to follow the extremes of fashion or to imitate some beautiful acquaintance, often of an entirely different cast of features, influences many to adopt styles which not only do not harmonize with the other features, but in addition accentuate their defects. When fashion dictates an unbecoming arrangement, a policy of partial adherence to the general style may often be made by introducing modifications in the general method of wearing the hair, which, while not following strictly the lines indicated, are not such a great departure from it as to attract attention by their strange-

ness, and do not, on the other hand, interfere with the best possible appearance of the wearer. In other words, in such cases the best plan is to follow the "golden mean," and not go to either extreme; although, perhaps, most of my feminine readers will agree with me that it is better to be slightly out of the fashion than to spoil one's good looks.

In general, a moderate degree of simplicity is the best rule for the arrangement of the hair. In most cases, also, the style which permits the general outline or profile of the head (particularly when viewed from the front, unless there are ugly features) to be indicated is the most becoming, although by this it is not meant that the hair shall be drawn tight over the head.

The forehead should never be entirely concealed, and in most cases covering or hiding any portion of the lower two-thirds of it will not be found an addition to the appearance.

Those having regular features and well-shaped heads will find the classic or Greek style (Psyche knot) the most becoming.

Those with long faces will appear best by allowing the hair on top of the head to lie as flat

as possible and spreading it out on the sides, thus making the face seem less long than it really is.

When the face is short and round, the opposite rule should be followed and the hair arranged on the top of the head as much as possible and flattened at the sides, except when there is also present a long neck, when it may preferably be worn at the back of the head.

In the case of very high foreheads the hair may be brought down a certain distance in the shape of curls or frizzes over the upper part of the forehead until the exceptional expanse is sufficiently covered and a forehead of ordinary dimensions is revealed.

Washing the Hair.

Washing an abundant head of hair is always a tedious and disagreeable task, particularly if one has to do it by one's self, and the facilities for rapid drying are not at hand; still it is one of the necessary penalties which the happy possessor of such a treasure must pay if it is to be preserved in good condition and appearance.

At least once a month the hair and scalp should be thoroughly washed, and oftener if there is much soot or dust in the atmosphere; once in two weeks will do no harm, and even benefit it if the owner has the time to thoroughly dry it, which is the most important point. Too frequent washings, particularly when very cold water is used, are apt to injure the hair, causing it to turn gray, fall out, or become dull.

The use of benzine and other light and volatile products of petroleum, called by various high-sounding names, generally for the purpose of concealing their real nature, in cleansing the hair by some hair-dressers is always attended by great danger of fire, the dreadful consequences of which can be readily imagined. In some countries and localities the frequent accidents of this nature have resulted in the absolute prohibition of the use of these fluids for such purposes. They do remove all the grease and some of the dirt from the hair without disturbing artificial curls or wavings, and have also the advantage of drying very quickly, in fact so quickly that the evaporation often chills the scalp and induces a cold.

Their real cleansing properties are, however, inferior to soap and water, and they also abstract too much oil from the hair itself. Their chief objection, however, is the danger of death from burning, which may result from the accidental introduction of a flame or even a small spark in the room or near a window of the room in which the operation is being conducted, so great is the inflammability of these fluids. A French chemist proposed, some years since, to substitute certain rather rare chemical fluids of similar nature, but not inflammable; but they do not seem to have been adopted, probably on account of their possibly poisonous action on the skin, although he claimed they were free from this defect.

The use of good toilet soap, such as castile soap of good quality, the various transparent soaps—of which Pear's is an example, although there are several similar ones of American manufacture—or Ivory soap, and water is the most efficient means of cleansing the hair and scalp. The soap may also be used in combination with borax, or the latter may be used alone, taking from one-half to two tablespoonfuls to a basin of water, according to the amount of water and

the quantity of hair to be washed. Borax has less injurious action on the hair and on a tender skin than most soaps. Prepared shampoos and those used by barbers and hair-dressers generally owe their cleansing properties to the carbonates of soda, potash, or ammonia; many also contain borax, and the fluid portion is either water alone or a mixture of water and alcohol to which a little perfume is sometimes added. The action of the carbonates of these alkaline salts is more vigorous than that of soap or borax, and they cleanse quicker, and for this reason are preferred by the hair-dressers; however, they have a tendency to roughen the hair and render it more brittle, as they take out more oil from it than the plain soap or borax. For this reason it is preferable to use the latter and to perform the operation one's self in order to be sure what agents are being used on the hair. Additional matter on the subject of washing the hair will be found in the chapter treating of the care of the hair in health.

About an ounce of carbonate of potash with an equal quantity of the carbonate of ammonia, or of either salt alone, dissolved in a basin of

water, makes a wash which has a tendency to lighten the hair, and produces, in the case of brown hair, a slight auburn or golden tinge; but it is open to the objections mentioned above concerning the effects of these salts on the hair.

An excellent wash for removing particles of dandruff which are distributed in long hair may be made by beating (preferably with an egg-beater in a deep, narrow dish) the yolk of an egg with a pint of warm rain-water, or, if other soft water is not obtainable, it can be made so by boiling ordinary well or city water. A small amount of essence of rosemary may be added to the liquid, but it has no particular cleansing effect, acting only as a perfume. In larger quantities oil of rosemary is said to form a stimulant for the hair, and is at any rate an agreeable dressing, but is rather expensive. Tepid water should be used to rinse out thoroughly the remains of the egg from the hair, and, in fact, in using any shampoo liquor, even soap or borax, pains should be taken to thoroughly wash and rinse the hair afterward with fresh clean water to insure the removal of all traces of the salt, soap, etc., that may have been dissolved in the washing liquid,

and which, if they remained, would seriously injure the hair.

The practice of having the hair shampooed at a barber's or hair-dresser's should be avoided, particularly when the place is not provided with hot-air blast or other device for quickly drying it; even then the hair is seldom completely dried when the owner leaves the building, which is not only injurious to the hair itself, but is liable to bring on a cold. Also, the shampooing liquors used are generally too strong and injure the texture of the hair, and one can never tell with certainty what is really being used and whether it is injurious, as often the hair-dressers themselves do not know.

If possible, therefore, everyone should wash or shampoo their own hair, or, at least, have it done in their own house with plain soap and water or other fluid the formula of which is known.

A good way to dry the hair after washing is, after it has been thoroughly wiped with dry towels, which should not be of a fluffy nature, as the fluff is apt to come off and get entangled in the hair, to sit in front of the grate, stove, or register, and, rubbing or waving the hair, ex-

pose alternately the front, sides, and back to the drying action of the heat. In doing this the tendency is always to get too near the source of heat, for not only should the hair not be exposed to the danger of scorching, but it should not be even allowed to get too warm. To wait for the smell of scorching hair is a very poor means of telling whether one is too close, and the oil of the hair may be dried up long before any scorching smell is given out; the best rule, therefore, is to sit at such a distance from the fire that all possible danger of too much heat is avoided, and depend more on waving the hair and exposing it to the air, and also by fanning the warm air into it, to hasten its drying.

In wiping long hair it is best, to prevent entanglement, to move the towel always in the direction from the roots to the ends of the hair, and never in the reverse direction, continuously forming fresh partings until the whole is sufficiently dry; wiping it backward or forward, or in any way suddenly reversing the motion of the towel, is sure to cause entanglement, whether the hair be long or not. (Cooley.)

For those who may prefer a regular shampoo

liquor the following formula may prove useful, and is comparatively harmless. It is said to produce a wavy condition, and the cochineal gives a slight auburn tint. It is particularly suitable for those troubled with greasy or damp hair:

Bicarbonate of soda.....	$\frac{1}{2}$ ounce
Borax	$\frac{1}{2}$ ounce
Cologne water.....	2 fluid ounces
Alcohol	2 fluid ounces
Tincture of cochineal.....	1 fluid ounce
Distilled water	1 $\frac{1}{2}$ pints

If one has not scales and measures, one may use one heaping dessertspoon for each half ounce of the soda and borax and two tablespoonfuls for each fluid ounce of the liquids. The cochineal may be omitted if no coloring action is desired. Mix and shake well in a large bottle until the salts are dissolved, and filter if necessary.

The sprinkling of a little dry and finely powdered starch through the hair while drying (but not while it is very wet) has been recommended to hasten the process, and really does so, but it is difficult to get rid of the starch powder com-

pletely afterward, and it is apt to make a mess on the floor or carpet.

Combs and Brushes.

The best shape and kind of these articles for general use have been described in a previous chapter. Ladies, however, should preferably have at least two combs, one with very coarse blunt teeth, the other with somewhat finer but not very fine teeth—at the finest there should not be more than twenty teeth to the inch, and the space between the teeth, when there are this number, should be at least as wide as the teeth. A comb containing from twelve to fifteen teeth to the inch will perhaps be found better for the finer one. Two combs are much better than one which has coarse teeth at one end and fine at the other. No one with any regard for the hair should ever use a fine-tooth comb, unless the presence of parasites or their eggs renders it absolutely necessary to do so.

A celebrated hair-dresser has remarked “that one cannot brush the scalp too much or the hair too little.” This is perhaps an exaggeration

in both directions; but, at any rate, brushing which pulls and strains the hair should be avoided.

Hair brushes may be cleaned in water to which a little ammonia has been added, or borax may be substituted for the ammonia; the water should preferably be slightly warm. The brush should not be completely immersed in the water, but should be gently moved up and down so that it completely wets the bristles, and then dried thoroughly; a final rinsing in a little weak alum-water, about an ounce to the basin of water, will increase the stiffness of the bristles.

Curling and Dressing the Hair.

Damp weather causes natural curls to curl all the more, while it straightens out artificial curls. The reason why some hair curls naturally is owing to its being flattened on one or more sides, as described fully in the chapter on the structure of the hair.

With ordinary care the use of curling papers, crimping pins, and similar appliances is not injurious; however, many persons pull the hair

so much in adjusting them and leave so much strain on it when the adjustment is complete that they injure its texture and shorten its life.

The use of curling tongs or other hot irons should not be resorted to, as without doubt the scorching action to which they owe their efficacy seriously injures the hair; in fact, much of the frontal baldness of women may be traced directly to their use.

The prepared bandoline and other gum solutions sold, under different names, for the purpose of stiffening the hair and making it hold its shape in a given position, as well as for making it appear thicker, are sometimes injurious, owing to impure materials having been used; cases having been known where the hair has from such causes turned a rusty gray. Persons using any of these preparations should endeavor to find out what the constituents are, or at least learn the experience of others who have used the same article for some time. As the results obtained by the use of bandoline are due to the fact that the hair is coated, in whole or part, by it with a thin skin of some gum, it follows that the hair is deprived for a time of air and ventilation and

is not particularly benefited by such applications.

Following are some formulas for the least harmful bandolines, which may easily be prepared in the household:

1. Take 1 teaspoonful quince-seed; 2 table-spoonfuls of flax-seed; a pinch of mustard-seed. Mix and crush or bruise in a mortar. Then add the crushed seed to two pints of soft or rain water and boil in a double boiler (oatmeal cooker) until reduced to one-half its volume, then strain through a cloth, and the resulting fluid is ready for use. It may be perfumed by adding cologne, oil of almonds, or any other perfume desired.

Quince-seed or flax-seed can be used alone in connection with water and prepared in the same way.

2. From $\frac{1}{4}$ to $\frac{3}{4}$ of an ounce of gum tragacanth may be dissolved in a pint of rose-water. The gum should be broken into small pieces and put into a bottle with the rose-water and allowed to digest, with frequent shakings, for several days, when it may be strained and is then ready for use. Perfume may also be added, and a reddish

color may be given by adding a little tincture of cochineal.

3. Gum arabic 3 ounces
 Water $\frac{1}{2}$ pint

The following formulas will be found useful to give a curly effect to the hair and to preserve the curling in artificial hair:

- Gum arabic 1 ounce
 Carbonate of potash..... 1 ounce
 Rose-water 2 pints
 Cologne 3 fluid ounces

Color, if desired, with tincture of cochineal. More gum arabic may be added if the results are not satisfactory.

The following will perhaps be found a better one:

- Borax 2 ounces
 Gum arabic $\frac{1}{4}$ ounce
 Hot water 1 quart

When the borax and gum arabic are completely dissolved add three tablespoonfuls of strong spirits of camphor. Wet the hair with the liquid just before going to bed.

To give a thicker appearance to fair hair, and at the same time act as a mild tonic, the succeeding formula will be found very useful:

Rose-water	4 fluid ounces
Strong vinegar	1 fluid ounce
Essence of cantharides	1 fluid ounce
Essence of violets	1 fluid ounce

Perhaps the simplest and at the same time a very efficient method of waving or giving a curly effect to the hair is to wet it thoroughly with the tincture of green soap and water (equal parts of each), rinse it thoroughly in fresh water, and then ruffle it while still wet, and allow it to dry without further disturbance. Wetting the hair with alcohol in the evening before putting it up in papers or curling-pins increases its curli-ness; but great pains should be taken not to get too near a naked flame when strong alcohol is used, as it may catch fire and burn the head seriously.

False Hair.

False hair, curls, and frizzes, worn in connection with the natural hair, put a strain on it,

owing to the extra weight depending on the hair itself and not on the scalp; they also prevent the natural hair from receiving proper ventilation, thus increasing the area of deficiency which they are intended to conceal. All false hair should be removed whenever it is possible to do so, particularly at night.

The more loosely the hair is worn the better it will be ventilated and kept in healthy condition. It should always be let down at night and a comb run loosely through it. When it is very long and apt to be entangled it should be loosely braided.

Ladies or young girls during any prolonged sickness or confinement in bed should have the hair formed into a number of loose soft plaits or braids, which, however, should only extend for about one-half of its length, beginning at the ends and going about half way to the roots. These should be opened occasionally and the hair combed and brushed and then rebraided, or, perhaps better, left loose for a few hours if the patient is quiet and there is no danger of its becoming matted and tangled in that time.

The subject of depilatories and other means

of removing disfiguring hairs is considered in a chapter especially devoted to that subject.

The Eyebrows.

Too heavy eyebrows give a harsh and coarse expression to the face; they may be thinned by pulling out the hairs with a pair of tweezers or by the process of electrolysis, when performed by an experienced operator. When too thin, alcohol may be applied once a week. Brilliantine, vaseline, and cocoanut oil have a tendency to darken the eyebrows. They should never be rubbed the wrong way, as it roughens them and tends to break the hairs.

CHAPTER VIII.

SUPERFLUOUS HAIRS AND THEIR REMOVAL.

While ladies rejoice and are proud of the possession of an abundant growth of hair on the top of the head, they regard with feelings of shame and humiliation the presence of even one or two prominent hairs on any part of the face. Women in middle and advanced age are the ones most commonly troubled with this affliction, but often quite young women, to whom good looks are a matter of more importance, are more or less disfigured by these misplaced growths.

They are also more common in dark-haired women and in those descended from the inhabitants of southern Europe than in blondes; and women subject to irregularities and suppressions common to their sex are more prone to be troubled with them, although they are by no

means an inevitable or even probable accompaniment of these troubles.

The desire to rid one's self of these disfigurements is as just and natural as the growths themselves are unnatural and out of place, and it is to be regretted that the feeling of humiliation so often coupled with this desire, which strives to conceal the means taken to remove the excrescence, has been taken advantage of by unscrupulous persons for the purpose of vending by mail, and even through reputable druggists, preparations which are not only poisonous, but in many cases absolutely useless for this purpose, and some of them have even produced unsightly scars much worse in appearance than the original disfigurement.

Even the more recent invention of the process of eliminating the hairs by electricity, called "electrolysis," which depends for its results on the destruction of the hair roots by the electric current, has also been quickly taken up by many ignorant and unskilled persons, who, by advertising widely, have succeeded in obtaining many patients, in spite of the painful results due to lack of skill and practice in an operation which

requires both these qualifications in the highest degree.

Without doubt there are advertising specialists in this line who do perform such operations with dexterity and great success, and it is the only really satisfactory and permanent method of removing misplaced hair growths. Intending patients, however, should either advise with their family physician as to the proper person to undertake this work (and there are many and even quite prominent regular physicians and dermatologists who do make a specialty of this operation), or they should benefit by the experience of some acquaintance who has thoroughly tested the efficiency of the advertising specialist in question. To go secretly, from a feeling of false modesty, to some so-called dermatologist, whom one knows only by his advertisements, is to run a great risk; and also, in matters which concern her appearance, a woman should be the last to prefer a cheap price to paying a fair equivalent for work which demands skill and practice; or risking a scarred face to keep secret a perfectly natural and desirable operation.

There are four methods in use for removing

the presence of superfluous hairs from the face or other parts of the body. These are:

1. Pulling out the hairs with tweezers.
2. Cutting the hairs or shaving them.
3. Dissolving off the hair by the use of chemical caustic solutions or pastes, commonly called depilatories.
4. The destruction of the hair-root by means of a needle charged with the electric current, commonly, but somewhat erroneously, called "electrolysis." This is really the only efficient and permanent method of accomplishing this object, as the others do not destroy the hair-root, consequently the hairs alway grow out again.

The use of tweezers to pull the hair out is not only a very painful operation, but it is not very successful, as in many cases it only stimulates the hair-root to further growth. When practised, only a very few hairs should be pulled each day.

Cutting the hair off with scissors or razor not only does not stop its growth but in time renders it more conspicuous, as continued cutting increases the thickness and darkens it. Also, it

is impossible with the scissors to cut off the hair very close, and even the razor leaves the stump of the hair visible to the eye. This, therefore, is an unsatisfactory means of ridding one's self of the annoyance, and should only be adopted as a temporary measure.

Chemical Depilatories.

The power of all of these agents to remove the hair depends upon the property which certain caustic chemicals possess to dissolve and destroy the hair tissues, or, in other words, to eat or causticize it.

As the skin is similar in its structure to the hair they also have a similar but more limited action on it. The active and poisonous nature of these agents may be appreciated when we mention that quicklime, caustic soda, potash, and baryta, and more frequently the several sulphides of these elements, are those most commonly employed. Many of the preparations on the market also contain certain compounds of arsenic, although it seems to have no particular action one way or the other on the hair, and is

probably introduced because from time immemorial it has formed an ingredient of a celebrated depilatory used in Oriental countries, having approximately the following formula:

Yellow sulphide of arsenic.....	$\frac{1}{2}$ ounce
Quicklime	8 ounces

mixed with water to a paste and boiled. Of course no one acquainted with the burning action of quicklime on the human skin and the poisonous action of arsenic is likely to knowingly make use of such a compound, yet preparations are in the market having a similar formula.

None of the chemical depilatories really destroy the roots of the hair, unless they are permitted to eat into the skin itself and destroy it also, when the resulting scar is worse than the original evil.

The only, and very slight, advantage which the process has over the razor is that the chemicals eat off or dissolve the hair a little further down than it can be cut off, and also delay its renewed growth for a little longer time; but under ordinary and bearable circumstances of use they have no power to stop the growth. Be-

sides, as, from their caustic nature, they can only be used in comparatively weak solutions or pastes to prevent injury to the skin itself, they have but a limited and unsatisfactory action on the thickest and most prominent hairs; most often not removing them at all, even on renewed applications, and only attacking the fine downy hairs, which are not so objectionable.

The use of depilatories—and we do not in general advise their use—should be confined to cases in which there is only a fine down to be removed, and even then the result is only temporary.

The sulphides of baryta, calcium (or lime), and soda are the substances most commonly used in preparations advertised and sold for this purpose; but in spite of the recommendations of the advertisements and labels on the bottles their action on strong thick hairs is rather limited.

A simple depilatory can be made by purchasing an ounce of sulphide of baryta and putting it in a wide-mouthed bottle with four ounces of water (about $\frac{1}{4}$ pint) and let it stand over night or a few hours; shake well before using. Enough of the liquid can then be mixed with powdered starch to form a paste to apply to the parts de-

sired. The remainder can be corked securely and kept for further use. The paste can be applied to about the thickness of a half-dollar; any further thickness is unnecessary. It should not be kept on the face longer than five minutes; if necessary a second application can be made the next day.

The following preparation has also been highly recommended, but it must be prepared by a druggist or chemist, and will probably be somewhat expensive, but the cost can be ascertained before purchasing. It consists of the sulphhydrate of calcium (calcium being the chemical name for the base of the substance commonly known as lime), and is made by passing a stream of sulphuretted hydrogen gas through a thick cream of well-slaked lime until it will no longer absorb any more of the gas. It requires about two hours to make a pint. The product should be kept in well-corked bottles, and will then preserve its strength for a long time. These bottles should have a wide mouth, or what is commonly called a salt mouth, as the resulting paste is rather thick and cannot be readily extracted from a narrow-mouthed bottle.

The paste should be spread thinly on the surface to be cleaned of hair with the finger or a little stick or swab, and does its work in from one to four minutes, according to the coarseness of the hairs to be removed. This can be determined by experimenting on a small surface, or it can be left on one or two minutes and then washed off and the result ascertained, and if the hair is not all removed a further application can be made. The paste should not, however, be kept on any longer than is necessary to remove the hair. The surface operated on should be thoroughly washed afterward with soap and water, as, indeed, it should be after the use of any chemical agents, and after drying, a little rice or starch powder may be dusted over it.

Before using any depilatory preparation on the face or other tender or exposed surface, a trial of its efficiency and harmlessness should always be made by treating a small surface of some less vital and exposed part of the body, such as the limbs, for the face is too valuable and too much exposed to be treated lightly with any chemical preparation whose action we do not know. In treating the face, where there is much surface

to be gone over, it is better to operate on a small surface each day than to attempt to remove all the hairs at one operation. The space gone over in one day should not exceed a half-dollar in size, and a space the size of a quarter-dollar would perhaps be preferable, as the depilatory is bound to have a more or less irritating action on the skin, and it is better not to have too large a surface affected at one time. If the skin continues to burn and itch even after the rice powder is applied, a little vegetable oil—sweet oil, cottonseed, or even vaseline—may be rubbed on it. It is not of much use in such matters to depend upon the experience of friends, for persons differ very much in the tenderness of their skins, and a depilatory that does not affect the complexion of one person may leave an ugly scar on the face of another.

Electrolysis.

This is the most satisfactory and complete of all methods of destroying superfluous hairs, and is also, when performed by a competent operator, less liable to pitting and scarring than the action of depilatories.

It demands, however, a considerable outfit of apparatus, and must, to be a success, be performed by a person having both natural manual dexterity and practical experience in the operation, which qualities naturally must command commensurate compensation.

The process, which is an American invention, having been introduced, about twenty-five years since, by Dr. Michel, of St. Louis, Mo., may be described as follows: The point of a fine needle, which is so arranged in a handle that an electric current can be passed through it by the movement of a switch, is introduced into the hair follicle, or depression in the skin from which the hair issues.

The switch is then turned on, and the current, which is generated by a series of from two to four, or even twelve to twenty, cells, passes through the hair-root into the body, and in its passage destroys the former, and the hair, having had its root destroyed and burned away, generally comes away when the needle is withdrawn. The number of cells used to generate the current is determined by the amount of pain which the individual patient can stand, and also by the

sensitiveness of the surface being acted on, the most sensitive parts being the sides of the chin and the upper lip. A strong current naturally takes less time, but causes more pain; and certain parts are, as just stated, more sensitive than others, and a weaker current must be used. The needle must be connected with the negative pole, for if the positive pole is used a black scar or pit is generally left at the point of contact with the skin. The positive pole is formed by a moist sponge which the patient being operated on holds in his hand, and thus has the opportunity of breaking the connection and stopping the current at any time by merely letting go the sponge. From fifteen to forty seconds' passage of the current is necessary for the removal of each individual hair, and very few persons can undergo the strain of having more than forty to sixty hairs removed during a sitting, although it is possible for some to endure a sitting in the morning and another in the afternoon. After the first few operations one becomes more accustomed to the pain and is able to bear the necessary suffering much better.

The operation is not complete when every in-

dividual hair has been removed, for, owing to the difficulty of touching exactly with the point of the needle the root of the hair, a certain small proportion of the roots are not killed and a few hairs will generally grow again, which may necessitate a second and in some cases a third operation.

Dr. George T. Jackson, of New York, who is an authority on this subject, mentions, in his work on the hair, having removed as many as 8,000 hairs from the face of a lady in the space of five months, and he also reports removing 4,800 from only one side of the face of another. In still another case 6,500 hairs were removed during a long series of sittings covering the period of four years; then, after a pause of five months, five hundred and eighty hairs which had grown again were extirpated, and after that there was no further growth. In general, when the hairs are quite numerous, three goings-over by a good operator are necessary to remove all growths.

Dr. Jackson reports the case of a young woman who, during the first series of operations, had two hundred and sixty-two hairs removed; three

months later he found that thirty-two had returned, which he removed, and at the end of a further period of three months only nine were observed to have again grown, which when removed completed the cure.

If the operator is experienced and skilful there is, in general, no perceptible scar produced by the operation; although if the skin is stretched in a strong light a minute pitting becomes visible. Some persons, however, are much more liable to scar than others, those having fine thin skins being most susceptible, and in the individual the upper lip is most apt to preserve traces of the operation.

Needles heated in a flame and then plunged while hot into the hair follicle have been used for the purpose of killing the root, but the operation is painful and dangerous, and has results much inferior to "electrolysis," even when performed by a very skilful person.

CHAPTER IX.

ARTIFICIAL MEANS OF CHANGING THE COLOR OF THE HAIR.

Dyeing and other methods of changing the color of the hair from that shade which nature has given us, by various artificial means, are practices which, in almost all cases, are open to a great number of objections and very few recommendations. Still, as they are customs which have come down to us from time immemorial and which will doubtless continue to flourish to a greater or less extent until the human race succumbs or is regenerated, those persons who are tempted or who feel obliged to avail themselves of their aid should be instructed and informed concerning the best means of accomplishing their desire, the dangers and inconveniences which attend the process, and the results which may be expected—which, we may say, even at the best, are always to the observant eye more or less artificial in their appearance.

The motive which induces persons to alter what they consider an unbecoming shade of the hair or to delay the appearance of age caused by either premature or naturally graying hair, is by no means an unnatural one, although in the great majority of cases it is not tempered by the best judgment, nor can the calling in of artificial aids to produce a youthful effect be called a dignified proceeding; on the contrary, these latter qualities would be better exemplified in the calm acceptance of conditions which nature or our mode of life has laid down for us.

For women, to whom appearance is of much more importance than to the male sex, the desire is the more excusable; and if my fair readers will pardon me for saying so, they are not perhaps held so much responsible and restrained by the dictates of judgment and dignity in these matters as their brothers and husbands. As, however, the only inducement which causes anyone to resort to these troublesome and artificial aids is the genuine improvement of the appearance and staying the hand of time, everyone should weigh carefully in his or her mind, before attempting anything of the sort, whether these ad-

vantages are, in any degree of probability, to be really obtained in their own case, without making at the same time evident to both acquaintances and strangers the factitious source of the change.

For, if the artificiality of the color is apparent to everyone, the last condition is worse than the first, for it not only does not add to the appearance, but also exposes the dyers to the ridicule of their friends and the derision of strangers.

In most cases, therefore, the resort to dyes and bleaches should only be made for the purpose of concealing a few straggling gray hairs or of slightly altering the shade of the hair or of increasing its glossiness and lustre; for the attempt to effect any startling change only exposes one to ridicule, without producing any corresponding benefit. Nature generally gives to each of us a shade of hair in keeping with the other features of our face, particularly of our eyes and complexion, and golden locks seldom spring from, and do not match with, sparkling black eyes and a tawny skin.

With reference to gray hair, perhaps the most

excusable use of the dye pot is that of middle-aged clerks, who, especially in England, are said to be obliged to dye their hair, because any appearance of age on their part endangers their positions, no matter how active and well preserved they may otherwise be.

When the hair is prematurely gray it is perhaps also somewhat excusable to endeavor to conceal a condition which belies the real age. But the least excusable of all are the middle-aged or aged men and women who, in spite of the fact that they have reached a time of life when judgment and dignity should be the predominant motives, and can no longer expect to claim admiration by their physical attractions, still endeavor to do so by weakly imitating with false and dyed locks the appearance of youth, which has evidently long since fled.

When gray hairs come naturally, as come they must if one's life is prolonged, it is better to make of necessity a virtue and accept with thankfulness the homage which the appearance of experience and knowledge they give attracts. A celebrated American physician has remarked that the best thing that can be done when gray

hair finally sets in is to admire it, and this is by far the most sensible course, for worrying only causes it to turn gray more quickly, and dyeing generally attracts more marked attention to the increasing age, without calling forth the compensating reverence which is due to those older and more experienced than ourselves.

The natural process, or, in premature cases, the disease which results in the graying of the hair is called in medical terms "canites," and is due to a failure of the supply of pigment or coloring matter of the hair, generally consequent on the failure of the natural powers owing to increasing age, but frequently the result of worry, illness, and shock, and in many cases coming on in early life without any apparent cause.

Physicians classify the cases of the affection into three divisions, according to the age of the person whom it affects:

1. Congenital canites, or that in which the person affected is born with gray or non-pigmented hair, such as albinos.

2. Premature graying of the hair, such as that from shock, fear, sickness, or from any cause in

which it occurs in a marked degree before the age of thirty-five.

3. Senile canities, consequent on old age, but naturally the change is hastened by excesses, trouble, overwork, and disease.

There is as yet no established and fully authenticated medical treatment, either external or internal, which can be depended upon to alter the color of the pigment of the hair, for dyeing only colors the outer skin or cuticle of the hair. Certain physicians have reported a few isolated cases in which it has been noticed that the use of drugs, particularly pilocarpine and jaborandi, for the purpose of treating diseases not connected with the hair, has been followed by a marked darkening of the hair; however, the results have not been sufficiently definite to warrant anyone being dosed with those drugs for this purpose, even if the patient himself should desire to pass through such an ordeal. If, therefore, one wishes to alter the color of gray hair the only practical way is to resort to the artificial aid of dyes.

The Dangers Met with in the Use of Hair Dyes.

Without doubt the great majority of hair dyes are of a poisonous nature, and there is always a chance that they may do some injury to the hair itself or to the general health; still, when one considers the number of persons that use them and the few cases of serious and permanent injury that do result, one is tempted to reply to the outcry against them raised by some physicians and chemists, with the answer given by a sceptical bystander to a bragging soldier: "Behold, the persons you have killed seem to enjoy very good health."

In most cases serious injuries result from the long-continued use of certain dyes, such as those which contain lead salts. It is important, therefore, that the intending user should know just what dyes are the least injurious and the nature of the injury that they may possibly cause.

For the better understanding of this matter, the accidents and injuries to health which may result from the use of dyes and bleaches may be divided into three classes:

1. Injuries caused by the accidental applica-

tion of the dye to parts of the body where it is not intended to be used, such as staining of the skin, getting corrosive matter into the eye or mouth, etc.

2. Injuries to the general health caused by the presence of poisonous matters in the dye, which are absorbed by the skin, such as the rather rare cases of lead poisoning, which sometimes occur when dyes containing much of that substance are used.

3. Injuries to the texture and health of the hair itself by the excessive or destructive action of the dye. These are of the most common occurrence.

Considering at length the first class, or the purely accidental injuries, we may say that the great majority of possible hair dyes, and, in actual practice, almost all of the really efficient dyes, are actively poisonous when taken internally, and many of them are quite caustic or destructive of the tissues of the skin when used in strong solutions.

Nitrate of silver, perhaps the most commonly used of brown and black dyes, stains the skin black as well as the hair, and it is very difficult

to eradicate the stain, even when powerful chemicals are used to remove it; it is also very dangerous to allow even the most minute amount of the solution of this salt to get into the eye. Nearly all dyes have a similar action on the skin to that which they exert on the hair itself, so that great pains must be taken to apply them to the hair only, and as far as is possible to prevent them from coming in contact with the skin. Other dyes, particularly those of aniline or coal-tar origin—and we may here say that these are sometimes sold under the name of purely vegetable or non-mineral dyes—are apt to produce eruptions and other skin troubles in some persons.

Of the efficient dyes used for dyeing blacks and browns, lead dyes have probably the least active poisonous action on the skin itself, although in certain persons their effects on the general health are the most injurious of any. Persons of a scrofulous tendency and those troubled with eruptions, swelling glands, or those having any temporary sore or scratch on the head, into which a small amount of the dye might work, should not use any mineral or poisonous

dye of any kind. If there is any unusual indisposition of any kind after having used a dye one should consult a physician, and the fact that a dye has been used on the hair should not be concealed from him.

*Injuries to the Health Caused by Absorption of
Poisonous Matter through the Skin.*

There has been much difference of opinion on this subject among physicians, some citing examples of great suffering and even death from the use of poisonous dyes; and others, while admitting the poisonous nature of the substances in question, denying that any serious injury could result from their careful use, except in the case of a few particular dyes, and these only to persons who were peculiarly susceptible to the action of certain poisons; as, for example, some persons are seriously affected by lead poisoning under conditions which would not produce the slightest effect on the ordinary individual.

Perhaps the best conclusion in this matter is that while no dyes benefit the general health, or the health of the hair itself, and while nearly all of them contain certain poisonous principles,

their use on the hair is seldom attended with any important ill effects on the health and still more rarely with any serious indisposition. In this respect dyes containing lead compounds, which are very common ingredients in preparations advertised and sold for this purpose, are perhaps the most open to objection.

Injuries to the Texture of the Hair.

The artificial alteration of the color of the hair depends on its property of being able to absorb and retain certain coloring matters when a darker shade is to be obtained, and on the power of certain chemical reagents to abstract or bleach the natural coloring matter when a lighter shade is to be imparted. There are also a few, and rather inferior, methods which give color by the adhering of the coloring matter to the outside of the hair itself, but these are not properly dyes, and are very seldom used.

In any case, the natural structure and composition of the hair are acted on, and none of these changes are for the better, and nearly all are rather for the worse, although in many cases but slightly.

The least injurious are in those cases in which sulphur is still present in the hair, and it is darkened by causing some metal, such as lead, iron, or silver, to enter into combination with this sulphur.

The use of a leaden comb, which should be kept clean and bright, will partially effect this; but iron and silver must be applied in the form of their salts dissolved in water or other fluid.

This method of changing the color, which is the most natural, is rather slow in bringing about. It is not always applicable, as in the case of white or very light hair there is no sulphur present, and it does not generally give a very fine shade of color.

The vegetable dyes, such as walnut juice, henna, etc., are also very innocuous, but it should be remembered that there is practically no ready-made purely vegetable preparation for dyeing the hair dark in the market, in spite of the advertisements to the contrary. Next to these in harmlessness rank the salts of iron and then the nitrate of silver solution, which is the most efficient and gives the best shades of any darkening dye.

As far as the injury to the texture of the hair itself is concerned—and it should be remembered that we are not considering in this paragraph the subject of the *general health*—lead is not very different in its action on the hair structure than nitrate of silver. The action of the aniline dyes, which are frequently sold under the rather misleading description of “non-mineral” dyes, for they are certainly not of vegetable origin as the term is commonly accepted, rank perhaps in harmlessness after the really mineral dyes, such as lead and silver. They are also open to the objection that in reflected light many of them give a greenish shade, and sometimes change entirely to that color.

Perhaps the most injurious of all, as far as the structure of the hair itself is concerned, are the caustic washes and solutions of peroxide of hydrogen which are used to bleach or impart a golden tinge to the hair. They act on the hair, only more actively, just as strong and impure laundry soap does on the skin, for they not only take away the coloring matter, but also the natural oil of the hair is abstracted, the tissues of the hair are injured, and it becomes brittle and falls

out. Of course healthy hair will stand a great deal of abuse and still retain to a great extent its beauty and health, and we do not mean to say that the moderate use of any of the means of lightening the hair will inevitably be followed by destruction or even apparent injury to the structure and health of the hair; nevertheless, there is no doubt that they do injure it to a certain extent, the more so the longer and more frequently they are applied, and the intending user should weigh well in his or her mind whether the advantage to be gained is worth the risk.

If possible, when purchasing any hair dye or bleach put up in packages for sale, persons should always endeavor to ascertain the contents or formula, in order that they may tell whether it contains any of the more injurious matters, as given in our descriptions; this proceeding, it must be confessed, is not always an easy thing to do, as most barbers and druggists are not acquainted with the contents or formulas of the proprietary preparations they sell, and, if they have anything of their own putting up, they are naturally loath to disclose the formula. The safest rule is not to use any preparation that

you do not know the contents of or have not seen given a thorough trial on some other person.

Application of the Dyes and Bleaches.

The best and most satisfactory results in the use of hair dyes are undoubtedly obtained when they are applied by a competent hair-dresser or professional hair-dyer, who has experience and all the appliances for performing an operation which is rather delicate and where a mistake or blunder is apt to have most mortifying and unpleasant results.

These remarks will also hold true in the case of the application of bleaches and lightening washes, though perhaps with less force, as there is not so much danger of any sudden and unlooked-for appearance in the gradual changes of shade which they produce.

Of course in these matters experience and skill must be paid for, and it is not often that the cheaper operator gives as satisfactory a result as the more expensive one.

Those, however, who, from motives of economy, secrecy, or the absence of any person to

whom they would care to intrust the process of application, feel that they must perform the operation themselves, should, after first giving lengthy consideration as to whether it is worth while attempting the matter, make, if they finally conclude to do so, the following practical tests of the harmlessness, efficiency, and results to be obtained from the preparation or formula in question. It is also better to make similar tests of the dye which any hair-dresser proposes to use when one has decided to have resort to the hands of an operator for that purpose, as the action of the same dye varies a great deal on different hairs and individuals.

One should first ascertain the action of the fluid on the skin, and for that purpose a few drops may be placed on the soft skin of the forearm or other part of the body where the skin is tolerably tender and a slight injury will not matter; if, after leaving it there for five or ten minutes, no great amount of irritation occurs, either at once or after some time, and it produces no stain, it may be considered safe to use. A more thorough and convincing test may be made by allowing the fluid to dry on the place

and observing the result in a few hours or even the next day.

To test its practical coloring value and its action on the hair, a few hairs may be cut off from some part of the head where their loss will be least felt (it is best not to attempt this test with dead or waste hair, on which the dye has a different effect from what it does on living hair), and divide the severed hairs into two about equal portions. One portion should be put aside just as it is, and the other should be well washed in soap and water or borax and water to remove the oil and grease which are always present on the living hair in greater or less quantities. The precaution of washing the hair thoroughly before the application of any dye whatever is absolutely necessary, otherwise a mottled appearance is apt to follow the application.

The dye should then be applied to the washed portion of hair in the same manner as it would be applied to the hair of the head. When dry, the shade or color should be noted to see if it is the one really desired, and after the lapse of several days the dyed lock should be compared with the undyed one to see if the dye has had

any injurious effect on the structure of the hair. If the shade is not that desired—and in this matter one cannot judge closely of the action of a dye on a sample of hair other than his own—the dye may be diluted with water or alcohol, according to which fluid is used in the original preparation, if too dark a shade is given; or, if too light, several applications may produce the required depth of color, and, in general, the best and most thorough results are obtained by producing gradually the desired shade by five or six applications of a weak solution rather than a single application of a strong one. Of course, where only a few straggling hairs are to be dyed, it is better to use a strong solution, and do it quickly.

The cleansing of the hair from all superfluous oil should immediately precede the application of any dye whatsoever, as the coloring substance will not fix itself on any surface or tissue where oil is present. To remove the natural oil the hair should be thoroughly washed with tepid water in which a heaping tablespoonful of borax and a teaspoonful of carbonate of soda or potash have been dissolved, or liquid ammonia may be

substituted for the carbonate, in which case two or three tablespoonfuls may be added to the water. If pomade, vaseline, or hair-oil have been applied to the hair, several such washings may be necessary, and are much preferable in any case to using more of the chemicals in the wash-water; the hair should afterward be thoroughly rinsed in a quantity of soft water to remove all traces of the borax and soda from it, and should then be allowed to dry thoroughly before the application of the dye.

The same cause which makes it necessary to remove all oil and grease from the hair before applying any dye may be used to protect the scalp and skin from the action of those dyes which stain or irritate it; for this purpose the forehead and the surface of the neck and head adjacent to the hair should be rubbed with vaseline. It is generally impossible to work any vaseline on the surface of the scalp without getting it on the hair, but if possible some may be rubbed into the scalp the day after the dye has been applied, taking care not to get very much of it on the exposed portions of the hair. This operation is best done by a second person, who

can open up the hair and expose the scalp. This precaution is particularly useful in those dyes, such as the aniline and pyrogallic ones, which with some persons irritate the skin where they come in contact with it, even after they have dried and become fixed.

It should be remembered that dyes are not permanent (although some may last for several years—silver and henna dyes lasting perhaps the longest), and also that they do not affect that part of the hair which grows up from the root after their application, pushing the dyed part further out; so that if there is much contrast between the original and the dyed shade it will become necessary in the course of six weeks or two months, and in some cases of quick growth much sooner, to have the newly grown portion colored to match the other, particularly in places where it is most conspicuous, over the forehead and along the other limits of the head and neck. This is rather a delicate operation, and must be performed with a fine pencil-brush at intervals of about six weeks, according to the rapidity of the growth. The most lasting dye will wear away in about three years, and most of them

require to be reapplied to the whole head in a very much shorter time than that if the original gloss and depth of color are to be maintained, even, perhaps, in some cases a number of times in a single year.

Description and Properties of the Different Substances Used for Dyeing the Hair a Darker Shade than the Original.

The following remarks include a complete list of the approved means and methods of darkening the hair by artificial means, beginning with those which are most inoffensive and harmless, both to the hair itself and to the general health, and indicating precautions and tests for the use of those which may possibly work some injury in this respect.

The following table may be found useful to the average person in comprehending the formulas given in the succeeding paragraphs:

One teaspoonful	=	about	one	fluid	drachm
One dessertspoonful	=	"	two	fluid	drachms
One tablespoonful	=	"	four	"	"
Two tablespoonfuls	=	"	one	"	ounce

The absolutely harmless methods of altering the shade of the hair are, unfortunately, for the most part rather ineffective and unstable. Willow charcoal, well powdered, and sometimes mixed with wax, has been used, but it comes off very easily and does not produce a good effect. The following method and formula may be used when there are only a few gray hairs, in a head of dark-colored hair, which are to be concealed; however, the color will not stand much washing:

Take of

Chinese ink	1 part
Gum tragacanth	2 parts
Rose-water	3 parts
Alcohol	4 parts

A little shellac dissolved in the alcohol in place of some of the tragacanth will render it less liable to wash off. The amount of rose-water and alcohol may be increased or diminished according to the depth of shade desired, but several applications of a light shade are better than only one of a very dark one, and the color is more stable when applied several times quite thinly than

when laid on thickly only once. Ready-made substitutes, which can be purchased at most stationers', are waterproof drawing-ink, particularly Higgins's, which can be had in all colors besides black, although the lighter colors are somewhat too brilliant and artificial for this purpose. They may be applied with a camel's-hair brush, but generally require dilution with water to which some ammonia has been added, or alcohol. The hair should first be washed thoroughly in about a quart of water to which a heaping teaspoonful of borax has been added and a like quantity of bicarbonate of soda; it should then be dried and the color applied immediately with a small pencil-shaped brush. This operation demands care and also a great deal of time when there is much hair to be gone over. It gives, while it lasts, a very good black or brown color, according to the original color of the hair and the strength of the solution used. This method has the advantage that if the skin is stained or smudged it can be readily cleaned with a little water and ammonia, and, also, if the color of the hair does not please after the operation, it can be removed by several thorough

washings in warm water to which carbonate of soda or ammonia has been added.

Harmless Vegetable or Mineral Dyes which Give a Chestnut Shade to Light Hair.

The following substances give a chestnut shade to light hair, and many of them will, by long-continued application, give a dark-brown or even approximately black color. They are mostly preparations containing oil or some tanning principle. They are practically harmless, but cannot be said to be as definite and rapid in imparting a shade as the dyes described a few pages further on.

All oils darken the color of the hair, and those having fine blond heads of hair and wishing to preserve it should never use any oil upon it. Among those oils which have a most active effect in darkening the hair are the oils of cade and of colocynth. The oils are slower in their action than the tanning principles and give less pronounced shades, but are more easily applied. Among the latter may be mentioned the extract of nutgalls, the extract or juice of the hulls of the black walnut, or even of the English walnut

or almond, infusions of sumac and of sage-leaves. The infusions are made by boiling the substances with soft water, or, preferably, letting them simmer with occasional stirrings for some days, or they may be put in a jar or large bottle with alcohol and kept for a week or ten days, with occasional shakings or stirrings. In any case the liquid must be separated by filtering through a piece of muslin or other light cloth. Several of the above-mentioned substances can generally be obtained at druggists' in the form of prepared tinctures or alcoholic extracts, and can be diluted or not, according to the results of an experimental test made on a separate piece of one's own hair.

The following preparation gives to light or sandy-colored hair a dark or modified chestnut color, according to the strength of the infusion used:

Juice of fresh walnut hulls. 5 to 10 parts
 Alcohol (proof spirit). 90 parts

The extract of the juice of the walnut hulls can also be purchased from some druggists, and may be diluted to suit, or it can be made by soaking an excess of the hulls in alcohol for sev-

eral days and filtering off the resulting fluid, which, if put into dark-colored glass or stone-ware bottles and well corked, may be kept for an indefinite period and still retain its properties. The walnut juice is not at all harmful in any way, but it will make a bad stain wherever it comes in contact with the skin. Before using it the usual precautions of washing and drying the hair should be observed.

Permanganate of potash, which is the solid form of the substance commonly sold in dark-red colored solutions under the name of "Condy's Fluid" and other trade names for disinfecting purposes, may also be used to give a dark chestnut shade to the hair. A teaspoonful of the prepared solution, or about a dozen grains of the crystal form of the substance, which can be readily and cheaply obtained at any druggist's, may be mixed with a good-sized teacupful of soft or rain water and the resulting solution applied to the hair with a sponge. Perhaps a better way would be to dilute the above solution three or four times with water and apply once a day in the form of a wash until the desired shade is obtained. In this case the wash will have to

be prepared fresh each day just before being used, as long contact with the air decomposes the permanganate.

Certain hair-dressers also make use of this substance in the following way: The head is first bathed with a dilute solution of the permanganate and is then washed with a much diluted fluid containing some tanning principle, such as sumac, extract of nutgalls, or infusion of oak or hemlock bark. This produces a more permanent shade, as the color is set or fixed in the hair substance by the action of the tannin.

If used in very strong solutions, which it should not be for this purpose, the permanganate will not only stain the skin, but with some persons may cause slight inflammation of the skin.

The salts of iron have a strong tendency to darken the hair, particularly when there is much sulphur present. They also have the advantage of being absolutely harmless, although they do not give the fine glossy appearance which is obtained by the use of nitrate-of-silver dyes, but rather a dull color. The acetate of iron is perhaps the best to use, but the sulphate of iron, or ordinary green vitriol or copperas, can be

used if it does not contain much free acid, which can be tested by tasting it with the tip of the tongue, but not swallowing it. A sufficient quantity of either of these salts can be obtained at any druggist's for a very few cents.

The hair may be washed in a basin of soft water in which from one to four ounces of either of these salts has been dissolved, using about two quarts of water for this purpose; or a slightly stronger solution may be made and applied with a sponge, but washing is the better course. The salts of iron do not in any way stain the skin. If on dissolving the salts there remains a rusty deposit which muddies the water it can either be filtered off or allowed to remain, if there is not too much of it, as it does no harm, being merely iron-rust.

These washes, which should not be repeated oftener than four or five times a week, will only alter the color of the hair very slowly, unless there is an excess of sulphur naturally present in it. Their action may be hastened by the application of vaseline, or some oil with which a little lac or milk of sulphur has been incorporated, or the hair may be anointed with a little

of both the white and yolk of an egg, which contains sulphur, beaten to a froth. This application may be made one day, and the iron bath the next, and so on alternately until the desired result is obtained. Great care should be taken to thoroughly distribute the sulphur and oil or the egg matter through the hair, as otherwise a streaky appearance is apt to result; but it is not necessary to use very much.

A still better and more simple method is to wash the hair the day after the iron bath in a basin of soft water into which a teaspoonful of sulphuret of ammonia or potash has been poured. By doing this the day after there is not much risk of staining the skin, which is apt to result if the iron and sulphur liquids are both present on the skin even in minute quantities. To avoid this the forehead may be rubbed with vaseline before the sulphur bath or it may be thoroughly washed in fresh water, but it is not desirable to wash or rinse the hair before the sulphur bath. Some of the so-called sulphur soaps on the market will also produce the same effect as the oil and sulphur mixture, except that they may be applied in the form of a bath the second day.

Nitrate-of-Silver Dyes.—Of all the materials used for imparting a black color to the hair, or for darkening it from a light sandy color to a chestnut or brown shade, nitrate of silver gives the handsomest and most permanent results. It is also, in its application as a hair dye, less harmful to the general health than lead or most of the other mineral substances used. Of course, when taken internally, by mistake or otherwise, it is a most violent poison, even in dilute solutions, and in the solid form it is used to causticize or burn away waste flesh, under the name of lunar caustic.

In the necessarily much diluted solutions in which it serves as a hair dye its external action is merely to blacken or darken the hair or skin in a greater or less degree, according to the strength of the solution; even such solutions, however, will cause serious trouble if they get into the eye, mouth, or a large cut. The solutions are made by simply dissolving the nitrate of silver crystals in the requisite quantity of water, when it is ready for use. In most cases it will be found preferable to have the druggist make up the solution, which can afterward be

diluted if found too strong. A test should be made of the coloring property of the dye in the manner already described before applying it to the hair. In applying the solution (after having freed the hair of its natural oil), bunches of hair should be taken up on a comb and rubbed thoroughly with a fine soft-haired brush which has been dipped in the solution. The hair should be thoroughly exposed to the action of the liquid, but should not be soaked or made sopping wet with it.

The brush should be moved in a direction from the roots outward toward the ends of the hair, and not in the reverse direction, when in contact with the hair. Plenty of time should be allowed if there is much hair to go over, as the operation is a tedious one, and, moreover, if satisfactory results are to be expected, it must not be done hurriedly or carelessly. It is very much better performed with the assistance of a second person; in fact, with long hair it is almost impossible for anyone to produce a satisfactory result alone.

To prevent staining the hands, an old glove may be worn or rubber cots on the ends of the

fingers. The head may be fanned after completion of the application, to hasten drying. When the hair is completely dry, washing the hair, face, and scalp thoroughly in a basin of water into which a tablespoonful of common table-salt has been dissolved will assist in preventing any discoloration of the skin, but if this is done before all the hair is "bone dry" a streaky result is apt to occur.

The full coloration does not appear all at once, but gradually, as the silver is acted upon by the organic matter of the hair. It is hastened by exposing the head after the application to air and light. The following are specimens of the formulas of simple silver-nitrate dyes taken from the analyses of actual proprietary preparations in the market:

Silver nitrate	$\frac{3}{4}$ ounce
Rose-water	1 pint
Ammonia	1 fluid ounce

A much weaker solution has this formula:

Silver nitrate	$\frac{1}{2}$ ounce
Copper sulphate	$\frac{1}{2}$ scruple
Ammonia	$\frac{1}{2}$ fluid ounce
Distilled water	1 pint

The following is a very much stronger solution than the last and gives a fine black color:

Silver nitrate	$\frac{1}{4}$ ounce
Acetate of lead	1 scruple
Rose-water	$\frac{1}{4}$ pint
Cologne (for perfuming only) ..	A few drops

About the same result is given by the next preparation:

Silver nitrate	1 ounce
Copper sulphate	$\frac{1}{2}$ drachm
Water	1 pint

The preceding formulas can be easily and cheaply prepared by any druggist, and if they give too pronounced a shade they can be diluted with rain-water until several applications give the desired coloration. They should be kept in blue or brown glass bottles or those made of stoneware, as exposure to bright light slowly decomposes the solution.

Nitrate-of-silver stains on the skin may be partially removed by rubbing the spot with a sponge wetted with a weak solution of the sulphuret of ammonia or of potash (when that liquid is used for the purpose of a mordant in

combination with the nitrate of silver, as described hereinafter, it may also be used for this purpose). A solution of iodide of potash may be substituted for the sulphuret; ordinary ammonia has some action on the stains, but does not remove them completely.

Mordants.—Professional hair-dyers frequently apply a second fluid, called a mordant, after the application of the nitrate-of-silver solution.

The word mordant is derived from the Latin word “*mordeo*,” that is, to bite, and is used because the mordant substance causes the dye to bite into and fix itself more securely in the texture of the hair or substance to which it is applied.

Therefore, when a mordant is used the color is apt to become permanent, and it is especially useful when the hair is very light or gray and consequently contains little or no sulphur.

The two bottles of liquid which are supplied with some of the proprietary hair dyes consist of the dye itself and the mordant. In most cases the mordant is applied first and the dye last, but the reverse is the better method. The mordant most commonly used is the liver of sulphur, known technically as sulphuret of potash.

The following are examples of the formulas of actual preparations on the market:

A dye giving a strong coloration:

Bottle No. 1—containing the dye.

Silver nitrate $\frac{3}{4}$ ounce

Distilled water $\frac{1}{2}$ pint

Bottle No. 2—containing the mordant.

Liver of sulphur $\frac{3}{4}$ ounce

Distilled water $\frac{1}{2}$ pint

Or a weaker solution, giving chestnut shades:

Bottle No. 1—containing the dye.

Silver nitrate $\frac{1}{4}$ ounce

Distilled water $\frac{1}{2}$ pint

Bottle No. 2—containing the mordant.

Liver of sulphur $\frac{1}{4}$ ounce

Distilled water $\frac{1}{2}$ pint

The method of application when the liver-of-sulphur mordant is used is as follows: after testing the efficiency of both solutions on a separate lock of one's own hair, freshly cut, and freeing the hair of the head from oil, the dye may be applied to the hair with a soft brush as previously described; when the hair has been gone over very thoroughly with the dye, and is not yet

quite dry, apply with another brush the mordant liquid; and, after drying thoroughly, wash the head in soft water to which a little salt has been added.

The liver-of-sulphur liquid should be freshly prepared or be well preserved by tight corking, as, if exposed, the sulphur separates out. If, however, it has a strong yellow or red appearance and a distinct and unpleasant smell, similar to that of rotten eggs, it may be considered as sufficiently pure for use.

A solution of gallic acid is also sometimes used as a mordant, and if kept well corked will, on the whole, answer the purpose rather better than the liver of sulphur.

The following preparation gives a brown or chestnut shade to light hair:

Bottle No. 1—containing the dye.

Silver nitrate	1 drachm
Copper sulphate	1½ scruples
Ammonia	20 drops
Distilled water	1 pint

Bottle No. 2—containing the mordant.

Alcohol	1 pint
Gallic acid	1 drachm

The succeeding formula gives a good black color:

Bottle No. 1—containing the dye.

Silver nitrate	1 ounce
Sulphate of copper.....	2 scruples
Distilled water	1 pint

Bottle No. 2—containing the mordant.

Pyrogallic acid	1 drachm
Distilled water	$\frac{1}{4}$ pint
Alcohol	1 fluid ounce

In using the silver dyes with a gallic-acid mordant, as given in the two preceding formulas, after washing the head to free it from oil, and greasing the forehead, the mordant or No. 2 liquid should be first applied in the usual manner, and when it is nearly dry the dye may be put on, and then, when the hair has again dried, give the head a thorough wash in a basin of salt water.

Pyrogallic-Acid Dyes.—Pyrogallic acid, when applied by itself, gives a brownish shade, and in some cases almost a black coloration.

The following formulas may be used, of which the second is probably the best:

Pyrogallic acid	1 scruple
Rose-water	$\frac{1}{4}$ pint
Cologne	A few drops

or

Pyrogallic acid	1 ounce
Acetic acid (dilute).....	1 fluid ounce
Alcohol (proof spirit).....	1 pint
Essence of lemon.....	$\frac{1}{4}$ fluid ounce

Pyrogallic acid may also be used with a mordant, such as bichromate of potash, as follows:

Bottle No. 1—containing the dye.

Pyrogallic acid	$\frac{1}{2}$ ounce
Alcohol	$\frac{1}{2}$ pint
Distilled water	$\frac{1}{2}$ pint

Bottle No. 2—containing the mordant.

Bichromate of potash	$\frac{1}{2}$ ounce
Water	1 pint

The dye, or contents of the No. 1 bottle, should be applied first and then the mordant. All the shades from brown to black can be obtained by varying the strength of the solutions of pyrogallic acid from one to fifty parts of the acid to one thousand parts of water taken by weight in

both cases. Although pyrogallic acid is of vegetable origin it should be remembered that it is a violent poison if taken internally, and if a little of a strong solution gets into the eye or a fresh scratch or cut it is apt to cause a troublesome and obstinate sore.

Bismuth Dyes.—The following dye having bismuth as a base has been recommended by an American physician. It gives deep browns and blacks according to the original shade of the hair:

Bottle No. 1—containing the dye.

Citrate of bismuth.....	1 ounce
Rose-water	2 ounces
Distilled water	2 ounces
Ammonia	A few drops

This is to be applied in the morning.

Bottle No. 2—containing the mordant.

Sodium hyposulphite	1½ ounces
Distilled water	4 ounces

To be applied the evening of the same day.

Vaseline with which a little subnitrate of bismuth powder has been thoroughly mixed is also sometimes used to gradually darken the hair, but

the process is slow, and bismuth does not possess any particular advantage over silver and lead in freedom from poisonous qualities.

Lead Dyes.—The acetate or sugar of lead is the salt most commonly used, and the formulas and methods of application are similar to those in which the silver dyes are used, except for nitrate of silver about half as much again of the sugar of lead should be substituted. The mordants used are the same. Sugar-of-lead dyes do not stain the skin when used alone, and even with a mordant do not make as bad a stain, when they accidentally come in contact with each other on the surface of the skin, as most of the other dyes. It should be remembered, however, that the fingernails, which contain sulphur, are stained by lead dyes the same as the hair, and in using a dye containing salts of lead they should be protected with finger cots or a coating of vaseline. Lead is, however, the most objectionable of all the mineral dyes on account of its injurious action on the general health of certain persons where its use is long continued.

In general, those preparations for dyeing the hair which are advertised as containing no silver

or lead or any mineral matter, if these statements are true, which is often not really the case, consist of anilines or other substances derived from coal tar, or occasionally pyrogallic acid. One of the most commonly used aniline dyes rejoices in the technical name of *chlorhydrate of paraphenyldiamine*.

On the whole, the aniline dyes have no particular advantage in harmlessness over the silver dyes, in fact the latter are generally less harmful. The aniline colors are at first rather more brilliant and varied, but they do not last so long, and the shades are more artificial and unnatural.

In some cases, a green tint is shown when they are viewed by reflected light and the hair has even been known to assume a green color altogether, after the lapse of some time from the original application. The range of shades given are similar to those of the silver dyes.

Conclusions concerning the Darkening Dyes.—To sum up the matter concerning the darkening dyes, we may say that on the whole the nitrate of silver dyes are the most reliable when properly applied and give the finest shades and glossiness, and are also the most permanent. The shades

given by it range from a fine natural chestnut to a deep black.

Walnut juice gives good browns, but they are not so rich as those obtained by the use of pyrogalllic acid. The shades given by iron and bismuth are rather dull and range from dark brown to black. Lead shades vary from a reddish brown and dark red to black, and when the solution is very weak a rough sandy appearance is imparted to light hair.

The hair can also be gradually darkened by washing it frequently in a basin of soft water in which a few drops of the silver dye have been previously mixed. The adjacent skin should be greased, and after the hair has been wiped dry a second wash in salt water should be taken. Care should be taken in the first washing not to get the water into the eye, although if not more than half a teaspoonful of the solution has been put into the water, a drop will do no particular harm if properly wiped out. The hand used should be covered with a glove, and the wash applied with a sponge, holding a towel in the other hand to prevent it running off on the skin or clothes.

Methods of Lightening the Shade of Dark Hair.

A great many women wish to have blond hair, and certainly they are somewhat excusable for the desire, if not for the consequent bleaching, for a fine blond head of hair is always an object of admiration. Most of the famous beauties of history have been blondes, although it is to be remarked that many of their romantic lives have had a sad ending. Among them may be mentioned Lucretia Borgia, Catherine de Medici, Marie Antoinette, and the Empress Eugénie.

With many women the object of bleaching the hair is not only to improve its color but also in many cases to obtain what they consider a better contrast with their complexion or the expression of their face.

The practice of bleaching or lightening the hair is as ancient as that of darkening it, if not more so, as the civilized ancients were mostly dark-haired people. It is related that while the Roman women bleached their hair, their African rivals, jealous of the effect, powdered theirs with saffron, and the Italian ladies of the Renaissance period, endeavoring to emulate the beautiful

shades of hair shown in Titian's paintings, went up to the roofs of their houses and exposed their hair to the noonday sun, wetting it meanwhile with some preparation, often with vinegar, and waiting till the sun had dried it, and repeating the operation as long as they were able to stand the exposure. Science has, however, perfected easier and more perfect methods of accomplishing this result for the benefit of their modern sisters.

Bleaching the Hair with Peroxide of Hydrogen.—This is the means most commonly employed, and the peroxide of hydrogen is diluted with water $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$ or even $\frac{1}{20}$ and more according to the shade which it is desired to obtain.

The peroxide is not a dye, because it does not add or impart any color to the hair, but is a bleach or decolorizer, taking away or destroying a part of the color that is already in the hair. It therefore has no action on white hair but only on that which is dark. Its employment is not at all dangerous or injurious to the general health, but its action on the structure of the hair itself is distinctly unfavorable, diminishing its vitality and rendering it brittle and dry according to the fre-

quency and strength of the peroxide washes applied.

The best use of the peroxide is for the purpose of slightly lightening the shades of dull hair, and to impart an auburn tint and richness of coloring it does not naturally possess.

Used in this way it is quite harmless, but, as previously stated, when an excess is used the hair becomes brittle and lacking in life.

Its effect on the hair of different people varies, on that of some it only seems to impart a faded-looking tint, and on that of others it has a very limited action. The best results are produced with those whose hair is somewhat dark, rather coarse, and naturally inclined to be wavy.

Before actually applying the solution to the hair of the head, several experiments should be made of its action on the hair of the individual, by cutting off small pieces and treating them with different strengths of the solution in the same manner as already described for testing the efficiency of dyes.

In first using the peroxide it is very much better to begin with a very dilute solution and depend upon a gradual change of shade rather

than on a sudden alteration. In this way one has full control over the process of altering the shade, which is not the case when a strong solution is used, as the alteration proceeds so fast that it may be overdone, not to speak of the injury to the hair itself from the caustic action of the peroxide; in other words, do not be in too great a hurry to achieve the improved shade, for the more haste means less speed and often a spoiled head of hair.

Peroxide of hydrogen is not a proprietary article but a regular article of commerce just, as salt, borax, or sal soda. It is practically the only fluid substance for bleaching the hair, and, except henna, the best; it is frequently sold as a special preparation under such fanciful names as Blondine, Aurine, Aureole, etc. It is much better, however, to avoid these preparations, which are not apt to be as strong and reliable as they should be, owing frequently to long keeping, as the peroxide gradually loses its strength with age; and when one has determined to use it, purchase the article under its own name from some first-class druggist. The bottle should be kept well corked. The wash is prepared by simply pouring the requisite quantity of solution into the

water, which should preferably be rain or other soft water. A little medicine measuring glass or druggist's graduate may be used for the peroxide and pint measure for the water. Thus a one-fortieth strength solution can be made by mixing a fluid ounce (equal to two tablespoonfuls) of the peroxide with two pints and a half of water. When the bath or liquid has once been mixed it should not be allowed to stand for any time, as the peroxide decomposes when exposed to the air, the more quickly in dilute solutions.

In applying the peroxide of hydrogen, the hair is first washed in water in which a little borax, carbonate of soda, or ammonia has been dissolved. This is to remove the superfluous oil from the hair. When the hair has thoroughly dried after this operation a sponge moistened with the diluted peroxide is passed lightly over it. This operation should be renewed at intervals of two days, about five times altogether for brown shades and three times for chestnut. If a very dilute solution of peroxide is used, say one-fortieth or still weaker, the hair may be washed in it.

Another method of applying the peroxide is

to use a rather long-haired soft tooth-brush, in the same manner as when applying a dye.

However simple the process of application of the peroxide may be, it must be repeated at intervals if a uniform color is to be preserved, for the hair growing out from the roots retains its original color and may grow as much as a quarter of an inch in a month, and where this new growth shows over the forehead and edges it must be bleached to prevent the contrast becoming noticeable.

As often as is necessary it must be gone over carefully with a small brush or minute sponge, using a moderately strong solution unless a good deal of time is to be taken; and it is certainly better for the hair to repeat this operation frequently and use a weak solution rather than to do it occasionally with a strong one.

Care should be taken not to touch with the brush those portions of the hair which have already been acted on by the peroxide, for then it will bleach them still more and there will be a further contrast.

Bleaching with Rhubarb.—The hair can also be stained by the aid of rhubarb, the wash be-

ing made by boiling about six ounces of rhubarb, grated into small bits, in a pint of white wine, filtering, wetting the hairs with the liquid, using the sponge, and allowing it to dry. The rhubarb used should be procured at the druggist's, for it is not the ordinary garden rhubarb. For the wine may be substituted water to which about ten per cent. of strong alcohol has been added.

However, the color given by this means is inferior in both shade and permanence to that imparted by the peroxide and has no advantage in cheapness.

The Use of Henna in Giving a Blond Color to the Hair.—This is the most ancient method of imparting a blond color or reddish tint to dark hair. Henna is also used in the Oriental countries to color the nails and skin as well as the hair. The leaves, which are the product of a small shrub growing in semi-tropical countries, contain the dyeing principle.

The process of dyeing the hair with henna is rather a difficult and complicated one and should be performed by an expert. In any case a separate test showing the coloration which the dye

or bleach will impart to the hair should not be omitted.

Henna gives to blond hair a reddish tinge; with black hair the shade ranges from fawn to a mahogany color; white hair becomes a reddish blond. Two persons having the same colored hair will, however, obtain different results unless their hair is also the same texture and degree of coarseness. If by any accident a color much too dark is given it can again be lightened by the judicious use of peroxide of hydrogen, which can also be used for the purpose of matching the new grown portions of the hair with the dyed shade.

Henna is generally sold in the shape of the natural leaf, but these are too large to apply to the hair and they must first be broken up moderately fine. The ground leaves are mixed with sufficient water to form a paste, which should not be so thin as to run readily. This paste should be thoroughly mixed with the hair and may be first applied with a small brush, and when the hair has been thoroughly gone over with that, the remainder of the paste may be placed on the hair so as to cover it, and left on for two hours. Care should be taken not to get the henna on the skin,

as it will make a bad stain which can only be removed with strong ammonia. The forehead, neck, and ears should be smeared with vaseline and also the hands, over which a pair of old gloves should be worn.

At the end of the two hours the henna may be washed off thoroughly, using at least five changes of hot water, and the hair will be found to be colored red. To modify this into a blond shade a further treatment with indigo is necessary. Either another paste is made with indigo and applied, or finely powdered indigo is thoroughly mixed with the hair and it is then exposed for some time to the action of a steam bath. The two dyes unite to give a blond or chestnut color according to the proportions of each used. The same precautions against staining should be taken with the indigo as with henna. It will be at once seen that this operation should not be performed by an inexperienced person, although if thought worth while one can practise on small quantities of loose hair until the desired shade and proficiency are arrived at.

The color of the new-grown hair must be renewed near the roots about once a month, unless

the artificial shade is not very different from the natural one. As it is difficult to perform this operation with henna, it may be done with a weak solution of peroxide of hydrogen.

Ladies are warned that, after having once dyed the hair with henna, it will take several years before the hair returns to its original color.

Unlike other dyes henna has not an unfavorable action on the hair, but renders it soft and brilliant. It cannot be said to bleach it, but really colors or dyes it.

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